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JULY 27, 1946

Railway Age

Founded in 1856

Fastest Everywhere!

That's the record of General Motors Passenger Locomotives

IN the rapid growth of the use of General Motors Diesel locomotives in mainline freight operation, there is the possibility that we may temporarily lose sight of the similar supremacy of General Motors locomotives in the passenger field.

An annual compilation in the British trade paper "Diesel Railway Traction", brings to light the fact that the top ten fastest start-to-stop scheduled runs of American passenger trains during 1945 were made by trains handled by General Motors passenger locomotives, and that out of the fifty-nine fastest runs in America listed, forty-seven are handled by General Motors locomotives. Ten of the remaining runs are steam and two electric.

The compilation also serves to remind us that General Motors locomotives handle most of America's crack trains not only on the world's fastest schedules but do it with unparalleled passenger comfort and safety, plus on time performance matched by no other form of travel, whether by land, or air or sea, all with operating and maintenance economies highly attractive to railroad management.

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION

GENERAL MOTORS — LA GRANGE, ILL.

MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

Climax Molybdenum Company
500 Fifth Avenue · New York City

MOLY

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 121, No. 4.

MORE SCRAP
for Steel Mills
MEANS MORE STEEL
for You

To maintain and if possible expand the present rate of steel production, larger supplies of scrap must flow immediately to the mills.

We urge that you ship every available ton of iron and steel scrap *now*, and that you see that it moves as rapidly as possible toward a steel mill.

In that way you will accomplish these two things:

1. You will help to avert the threat of a scrap famine which would severely curtail the production of needed steel.

2. You will help the steel mills in their continuing effort to make more steel for yourself and other steel consumers.

BETHLEHEM STEEL COMPANY
General Offices: Bethlehem, Pa.

BETHLEHEM PACIFIC COAST STEEL CORPORATION
General Offices: San Francisco

★ BETHLEHEM STEEL ★

NEW!

"MIDDLEWEIGHT CHAMPION" JOINS THE ALCO-G.E. LINE

70 tons of motive power that has earning power-plus!

You've been looking for the increased power and versatility of this new diesel-electric for service on the road, in the yard, in transfer work.

Now, it's here! Its weight, evenly distributed over four driving axles—34,750 pounds on each—makes this locomotive particularly adaptable to service where roadbed, bridges, and lightweight rail require limited axle loadings. High availability, of course; the average is 95 per cent. But along with it goes the ability to do so many different kinds of work that utilization can be just as high as availability. And that means more work done in less time, at lower cost, with fewer locomotives. Here's motive power that has earning power-plus!

The versatility of this 70-tonner is the result of its unusually high ratio of horsepower to weight, and its high utilization of engine horsepower throughout a wide range of locomotive speeds. The "Middleweight Champion" is powered by a 6-cylinder, 4-cycle, diesel engine, continuously rated 660-hp at 1000 rpm and delivering 600 hp net to the generator for traction. The four new motors and the new generator were specially designed for this locomotive by General Electric on the same basic principles which have been proved sound in the 44-tonner and the larger Alco-G.E. units.

This new diesel-electric rounds out the Alco-G.E. line, fitting between the 44-ton, 380-hp Lightweight Champion and the 100-ton, 660-hp switcher.

Ask your Alco or G-E representative today for specifications on the new "Middleweight Champion."

Alco GE

AMERICAN LOCOMOTIVE

70 TONS . . . 600 HP

TONS IT CAN HAUL

SPEED MPH	TRACTIVE EFFORT	GRADE					
		LEVEL	0.5%	1.0%	1.5%	2.0%	2.5%
6.2	28000	3255	1456	922	662	513	412
7.5	24000	2780	1240	781	558	430	344
10	18400	2120	938	584	414	314	248
15	12800	1462	632	386	268	198	152
20	9600	1079	458	273	184	132	97
25	7600	839	348	201	131	89	62
30	6250	673	271	151	94	60	36
40	4500	443	166	83	43	20	4
50	3350	273	88	32	6	—	—

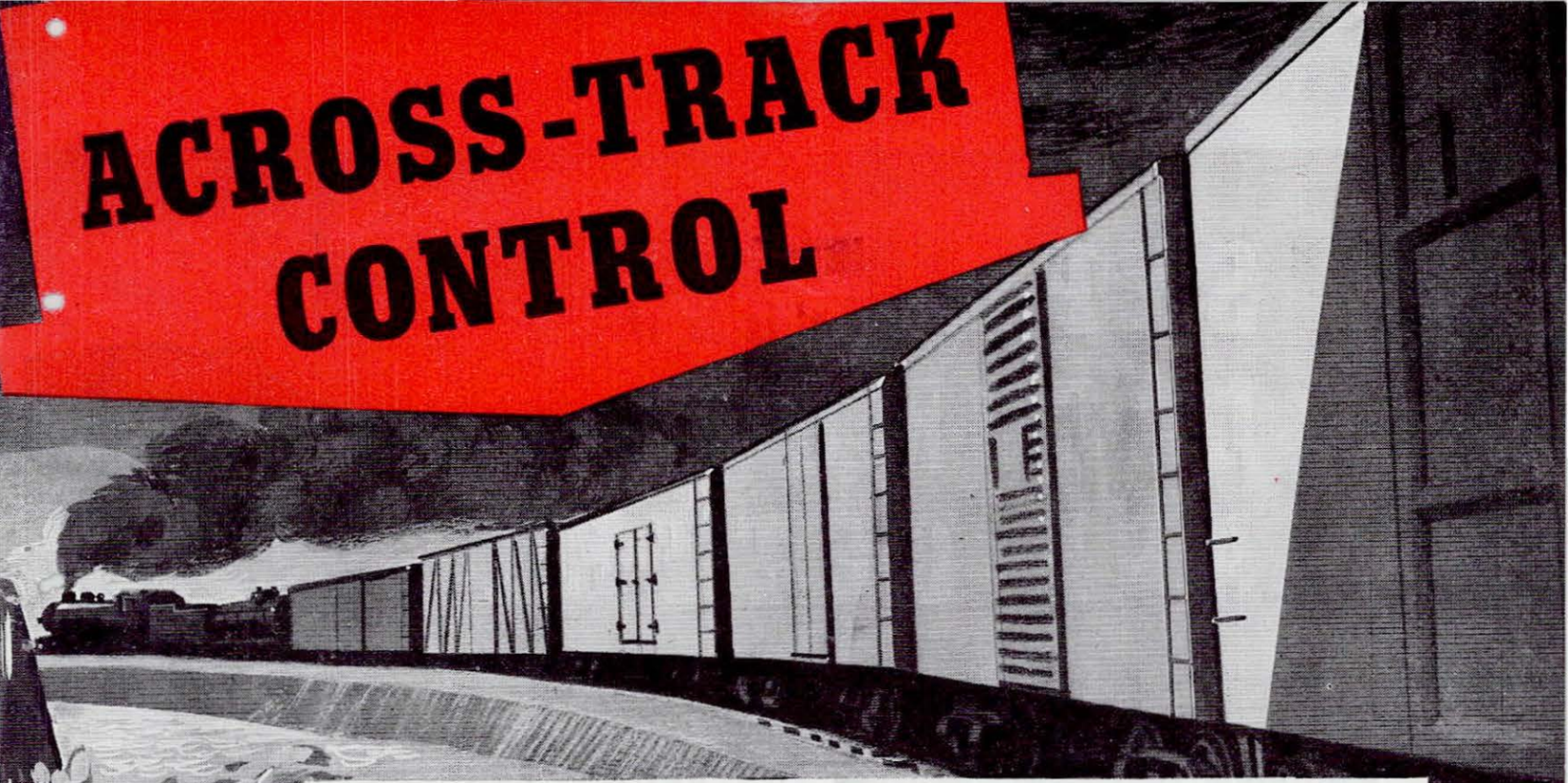
NOTE: Resistance based on 8.5 lb per ton. Tonnages do not include weight of locomotive.

and GENERAL ELECTRIC

121-38-9580

For
INDIRECT LIGHT THAT'S "TOPS"
.. this is the lamp!
The standard line of G-E Silvered Bowl lamps includes the standard wattage from 60 to 1000 watts!
G-E Silvered Bowl Lamps with their built-in reflectors give a wide-angle spread of indirect light. And the reflectors can't tarnish, always *stay clean!*
G-E Silvered Bowl Lamps are forerunners of the many newer type lamps with sealed-in reflectors, such as G-E Reflector and Projector lamps and other new lamps—all products of G-E Lamp research, always at work to make G-E Lamps *Stay Brighter Longer.*
G·E LAMPS
GENERAL ELECTRIC
Stay Brighter Longer!

ACROSS-TRACK CONTROL



These Better Freight Car Trucks Protect Lading From All Kinds of Track Shocks

When ordinary freight car trucks hit a curve, what happens? This:

Axles take up their lateral play . . . bolsters bang over against their "stops." And if the shock is severe, the car body gets the kind of a jolt that means *trouble* sooner or later for roadbed, car, or contents. Even on straight track, control of *lateral* motion is just as important as up-and-down spring control.

You get *both* kinds of control in A. S. F. Ride-Control Trucks. Free lateral movement of axles permits wheels to "hunt," but sidewise bolster movement is cushioned by continuous friction—the *same* constant friction between bolster and side frames that controls up-and-down spring movement.

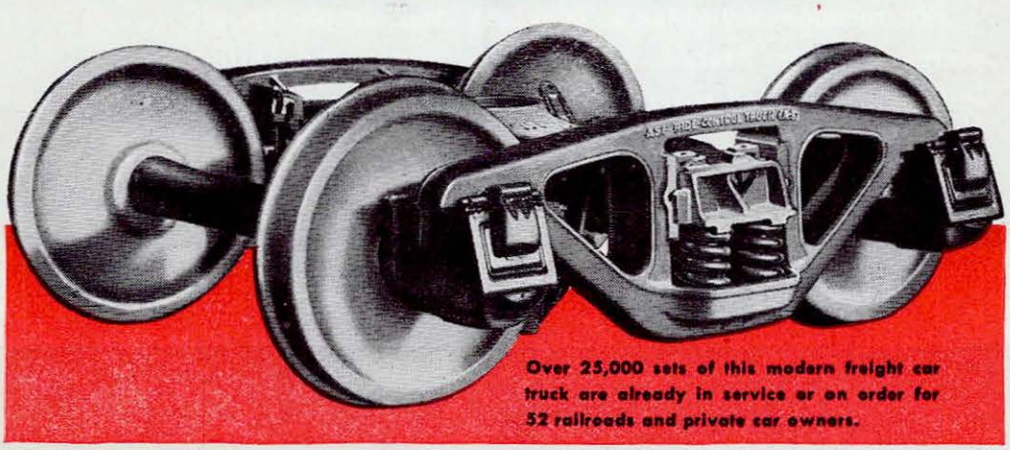
In the A.S.F. Ride-Control Truck, back-and-forth bolster motion is *resisted* and *controlled* without a single addition to the truck assembly. Control mechanism, contained entirely within the bolster itself, *absorbs* both lateral and up-and-down forces.

The Ride-Control Truck is the modern truck for all loads, all speeds . . . all *needs*.

A·S·F *Ride-Control* TRUCK

NO SPRING PLATES—NO SPRING PLANKS

LONG SPRING TRAVEL • CONSTANT FRICTION CONTROL



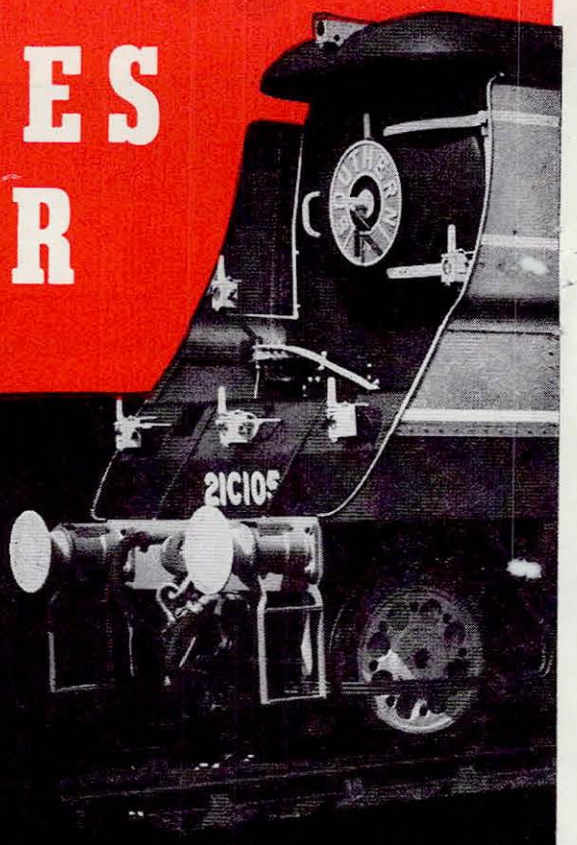
Over 25,000 sets of this modern freight car truck are already in service or on order for 52 railroads and private car owners.

McNEAR

AMERICAN STEEL FOUNDRIES

MINT-MARK OF ⬡ FINE CAST STEEL

SYPHON LOCOMOTIVES ARE BETTER



Chief Mechanical Engineer BULLEID of Britain's Southern Railway, Comments:

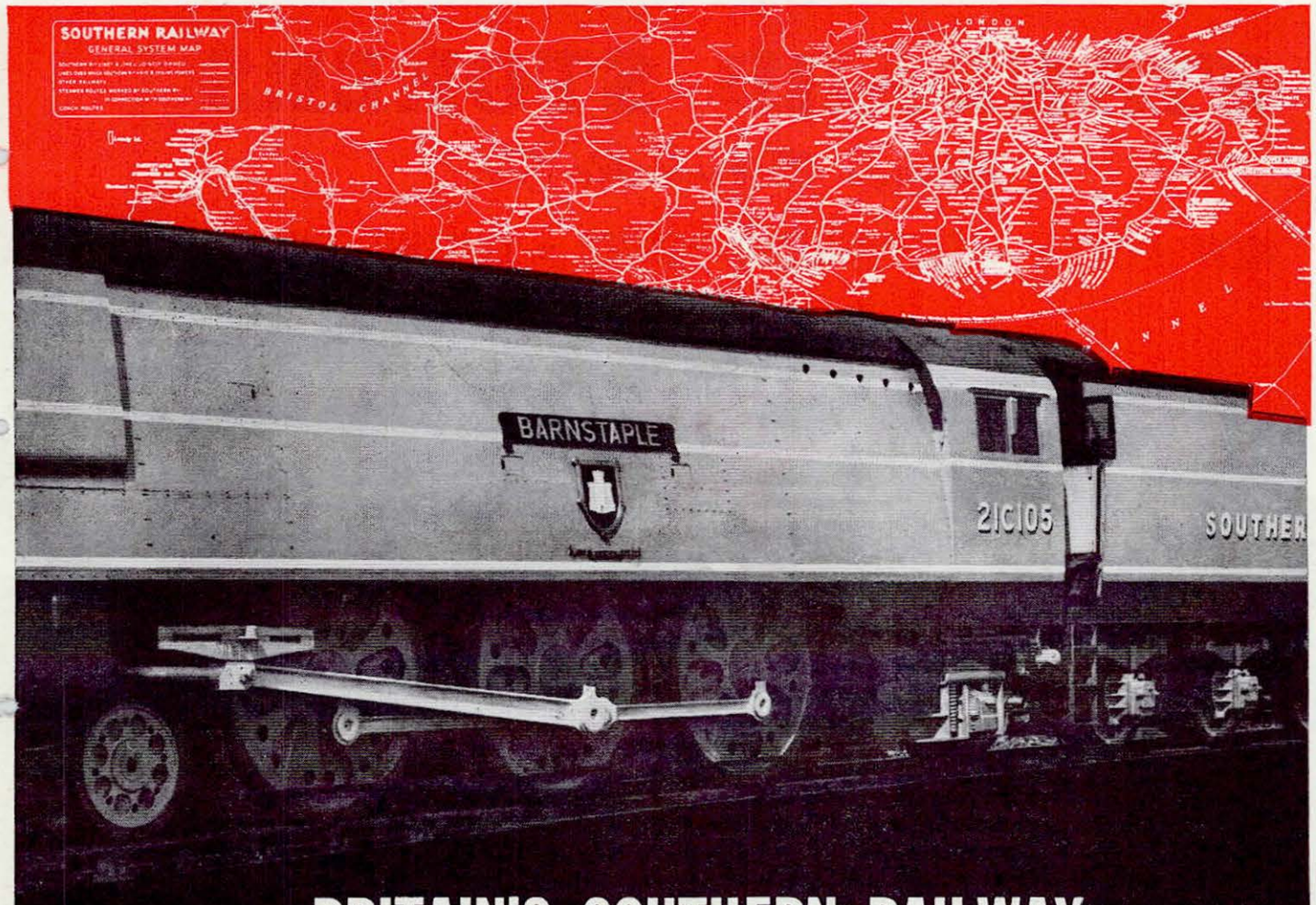
"A number of these locomotives are already in service, and are creating a very favourable impression in fast, hard service on both passenger and freight trains."

West Country Class Locomotives (named after the most important towns) were built primarily for weight restricted routes west of Exeter, nevertheless had to be built with sufficient capacity to enable them to work either passenger or freight trains over any part of the main lines.

Thermic Syphons contributed much to the boiler capacity with minimum weight. Steel fireboxes fitted with Thermic Syphons are used in all of these locomotives.

For reasons of lightness, economy and simplicity, all plates of outer firebox, backhead, wrapper and throat sheets, are welded together, as are all the inner firebox plates.

NICHOLSON THERMIC SYPHONS ARE A PRODUCT OF



BRITAIN'S SOUTHERN RAILWAY
70 "WEST COUNTRY" CLASS LOCOMOTIVES

a lightweight version of the syphon equipped "Merchant Navy" class engines are also fitted with **NICHOLSON THERMIC SYPHONS** *for*

- **MORE HEATING SURFACE**
- **MORE BOILER WATER CIRCULATION**
- **MORE ECONOMY IN FUEL AND MAINTENANCE**
- **MORE BOILER HORSEPOWER**
- **MORE LOCOMOTIVE**
- **COMPLETE PROTECTION FROM BOILER EXPLOSION**

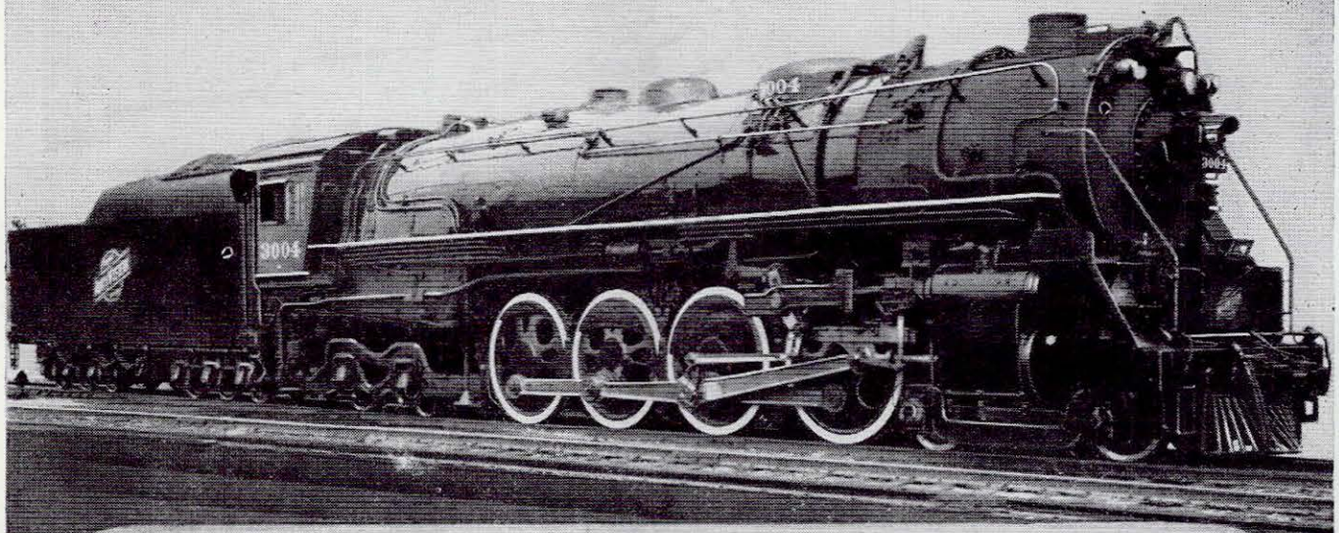
Locomotive Firebox Company

PHILADELPHIA CHICAGO MONTREAL

STANDARD STOKERS

Always Dependable For

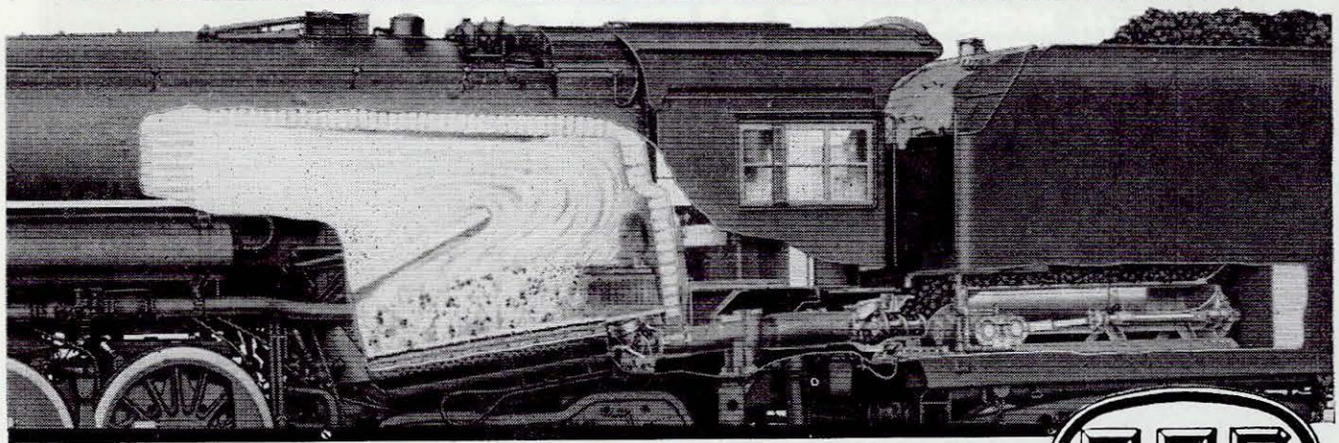
NEW POWER • MODERNIZED POWER • EXISTING POWER



North Western locomotive 3004 is the first of a group of 4-8-4's to be rebuilt and modernized in the Railroad's shops - - These dual-purpose locomotives are well adapted to meet the service requirements for modern, high-speed freight and passenger traffic.

Standard MB Stokers, an integral part of these locomotives when originally built, have also been modernized - - and will continue to make available the necessary power for producing greater hauling capacity at sustained high speeds.

METHOD OF FIRING WITH A STANDARD MB STOKER



THE STANDARD STOKER COMPANY, INC

NEW YORK • CHICAGO • ERIE • MONTREAL

SSC

REG. U. S. PAT. OFFICE

Here's the dirt on roadbeds...

and it's not good unless you get it out. The McWilliams "Mole" will clean your roadbeds for you quickly and efficiently. A crew of only four men can clean 850 to 1200 feet of shoulder in 8 hours with the shoulder model illustrated. Five men can do a similar job with the intertrack model.

RAILWAY MAINTENANCE CORP.

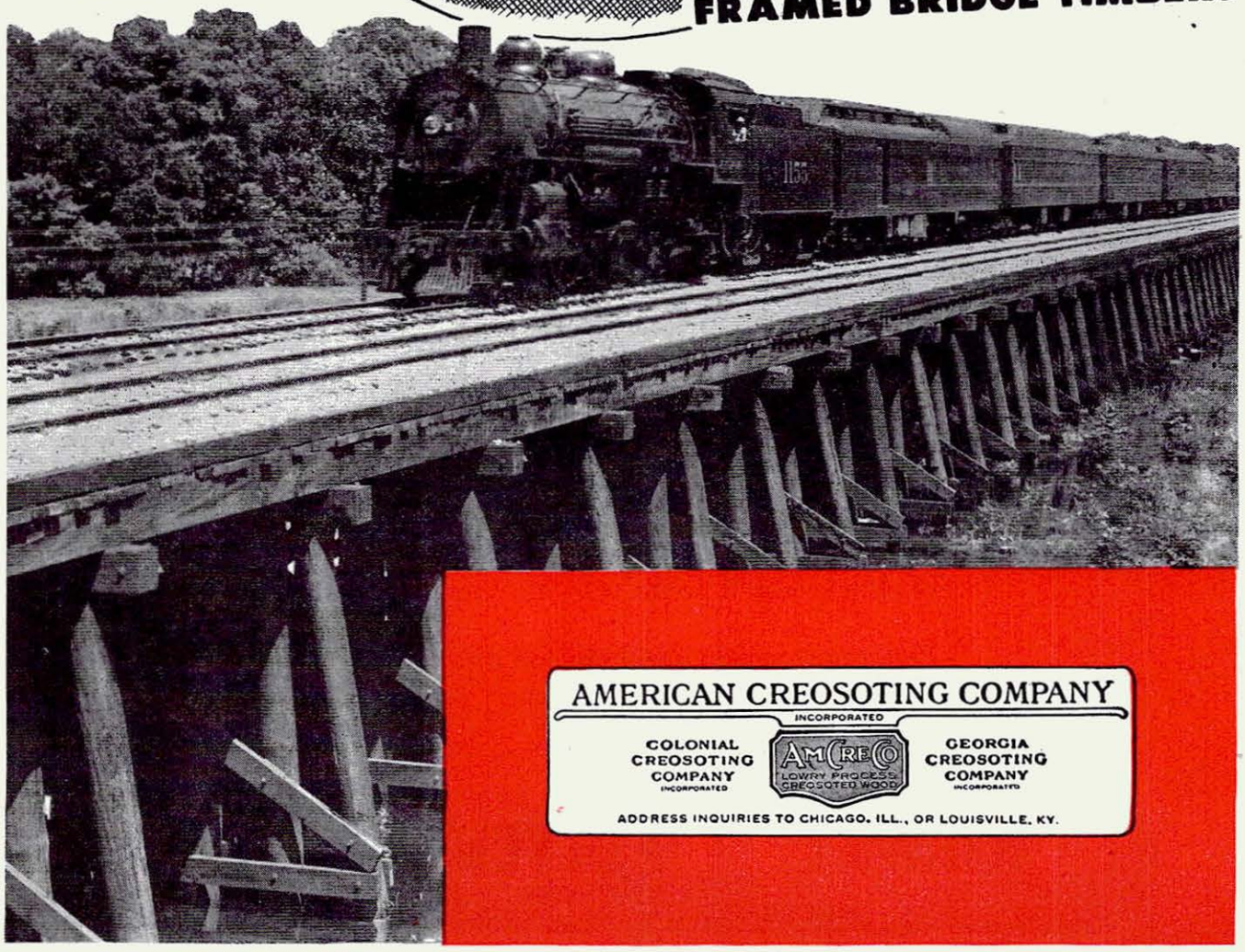
PITTSBURGH 30, PENNSYLVANIA

Amcreco Creosoted products

Carefully selected timber treated by Amcreco means long life... dependable service... maintenance economy

ADZED AND BORED CROSS TIES • BRIDGE TIES • PILES

FRAMED BRIDGE TIMBERS



AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

AMCREO LOWRY PROCESS CREOSOTED WOOD

GEORGIA CREOSOTING COMPANY INCORPORATED

ADDRESS INQUIRIES TO CHICAGO, ILL., OR LOUISVILLE, KY.

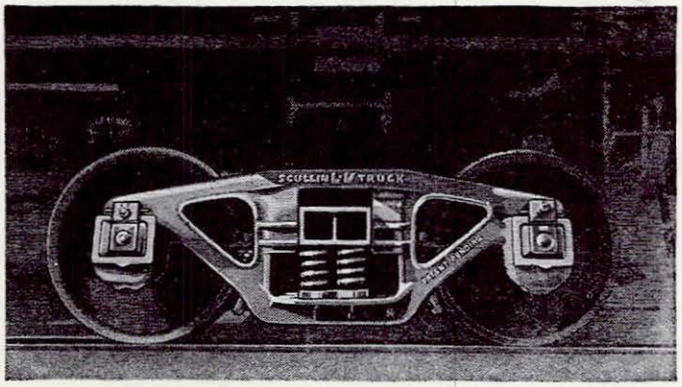
FREIGHT CARS WITH "SLEEPER" SMOOTHNESS...

The New

SCULLIN L-V TRUCK

LATERAL-VERTICAL CUSHIONED MOTION

TAKES THE "SWING AND SWAY" OUT OF YOUR FREIGHT



Designed to make higher speeds really *safe* for lading, cars and roadbed. Completely controls and cushions all lateral and vertical motion—necessary to provide ultimate riding qualities.

• Simple, trouble-free, easy to maintain • Eliminates lateral impacts • Maintains constant controlled truck alignment • Comparable to conventional freight car trucks in both price and weight • For complete details write:

ARMY ★ NAVY

SCULLIN STEEL CO

SAINT LOUIS 10, MISSOURI

STEEL CASTING MANUFACTURERS SINCE 1899

NEW YORK • CHICAGO • PHILADELPHIA • CLEVELAND • ST. PAUL • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.

Good Companions

...on New Passenger Cars

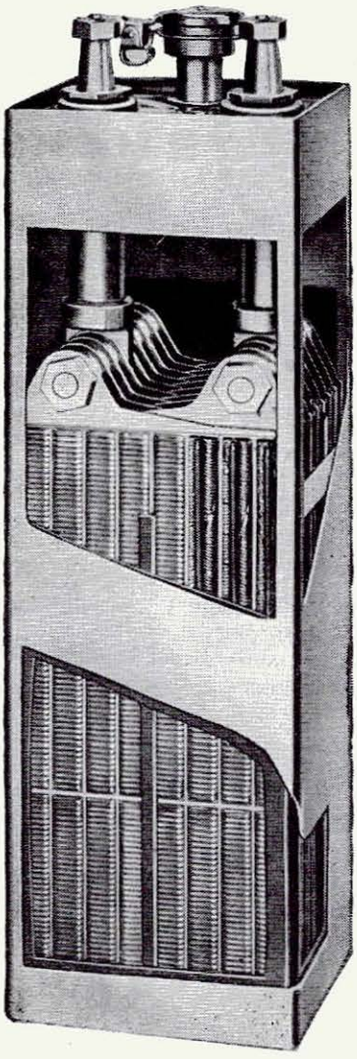
1. Ultimate comfort

2. Light weight

3. Alkaline batteries

Ample refrigerating capacity for air conditioning, high standards of illumination, radios, motion pictures, and many of the other features now being planned for passenger comfort will function from the electrical power supply of the car.

The trend will very probably be toward more of these features, higher electrical loads, and batteries of higher capacity. If so, batteries will be needed that provide increased capacity with the least additional weight and with the greatest inherent dependability of operation. All of these requirements are met by Edison Alkaline Batteries. *Edison Storage Battery Division of Thomas A. Edison, Inc.,*
West Orange, N. J.



Steel cell construction is an important reason for the durability and light weight of Edison Alkaline Batteries.

Edison
THE LIGHTWEIGHT BATTERY
FOR LIGHTWEIGHT CARS

...the roofing "specs" you need are in this New, Simplified Book

Now, when you want any type of built-up roofing specification . . . smooth-surfaced or gravel-surfaced . . . you can simply copy it from the new, revised Johns-Manville Specification Manual.

Clear, concise, and up-to-date, based on Johns-Manville's 88 years of roofing experience, this Manual is organized to give you in the quickest possible way a complete roofing specification for any type of deck—wood, steel, concrete, or gypsum.

In addition, the book gives complete flashing specifications and detailed drawings of various flashing methods. It specifies how roof insulation should be applied. *It tells why a J-M Flexstone Roof made of asbestos felts—fireproof, rotproof, smooth-surfaced and unaffected by the sun—deserves your careful consideration.*

We cordially invite you to send for your copy. There's no obligation, of course.

Mail this coupon ↓

JOHNS-MANVILLE
Dept. RA-7, P. O. Box 290, New York 16, N.Y.

Without obligation, please send me a copy of the J-M Specification Manual on Built-Up Roofs.

Name_____

Address_____

City and State_____

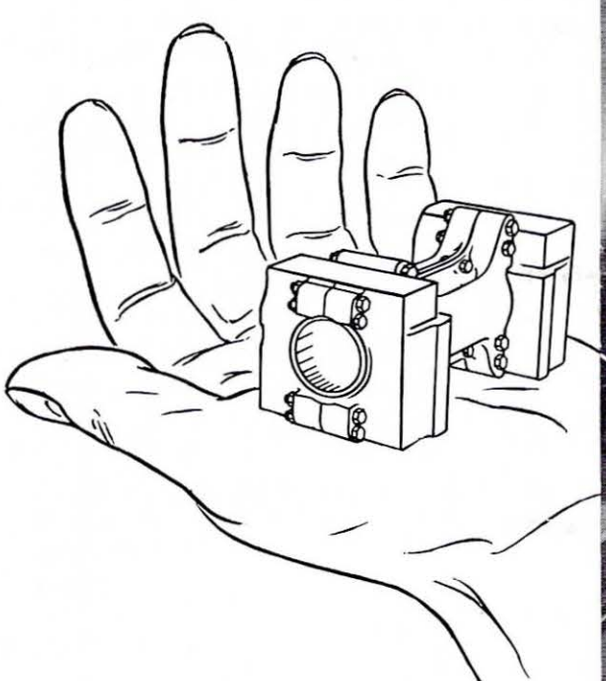
Johns-Manville

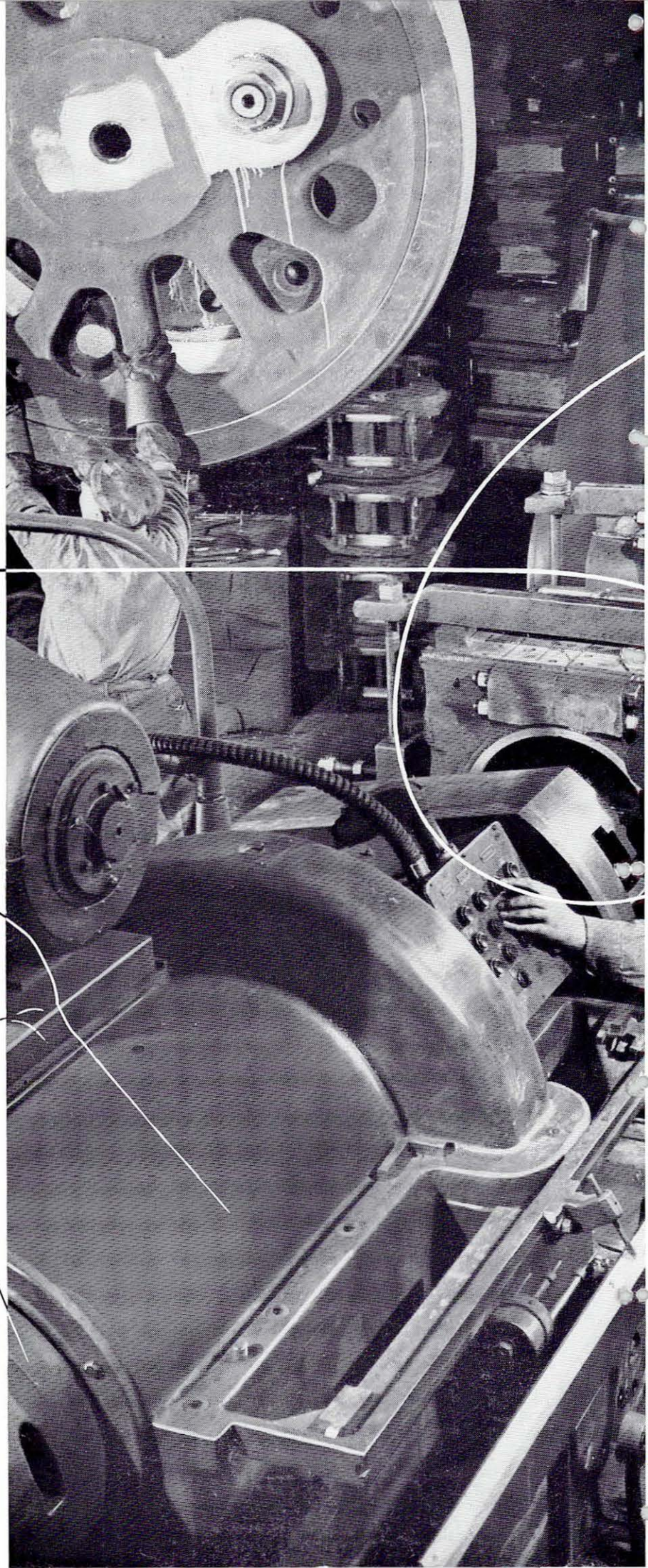
88 YEARS OF SERVICE TO TRANSPORTATION

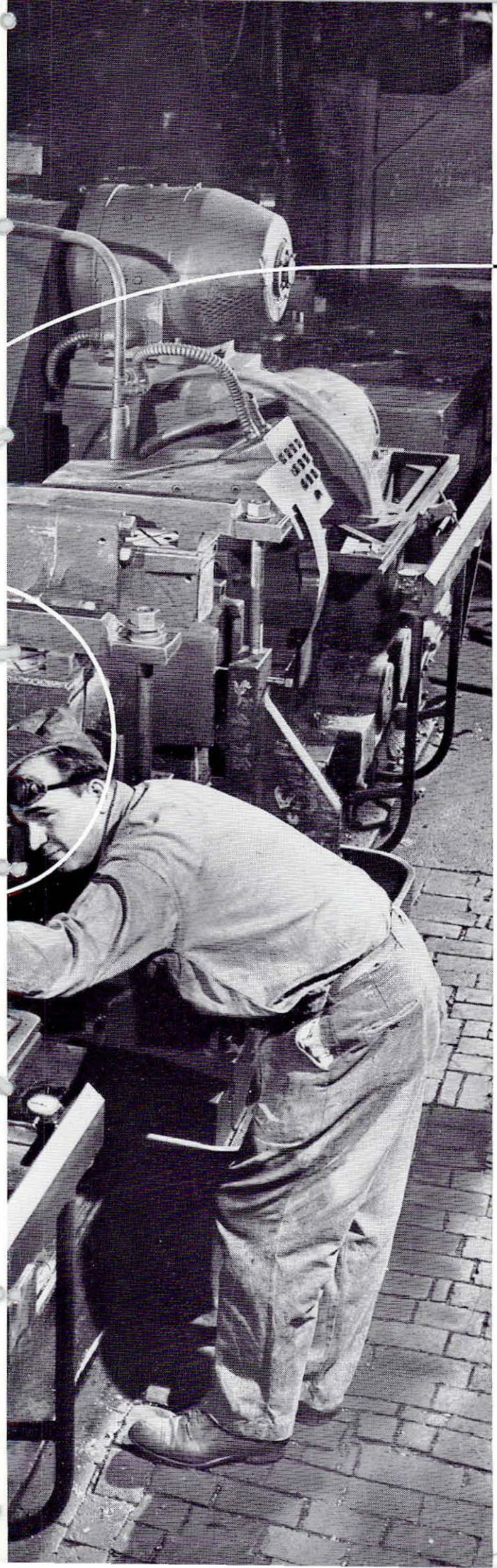
Facts About Steam
Locomotive Parts

Driving Box

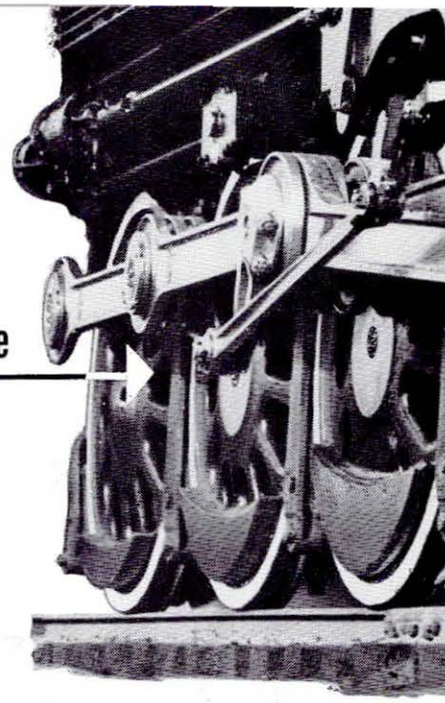
What happens here . . .







. . . may make a huge difference to service and safety here!



Fourth Advertisement of an Important Series

BEARINGS on locomotives and on every car in a train, for that matter, are objects of closest inspection, as every railroad man knows.

This special double-headed mill, shown here machining an ALCO driving box housing, is designed to handle any horizontal work on roller-bearing driving boxes. Two-head operation guarantees bores are in exact alignment, permits close tolerances, and reduces machining time. The machine can, if desired, handle two single bores simultaneously.

The ALCO machine shown is used only on finish work. Its high accuracy is not endangered by rough machining. Rough machining is done on another mill.

Because ALCO shops are equipped solely for large-scale production of locomotives and locomotive parts, an equipment investment ideal for that purpose can be economically supported.

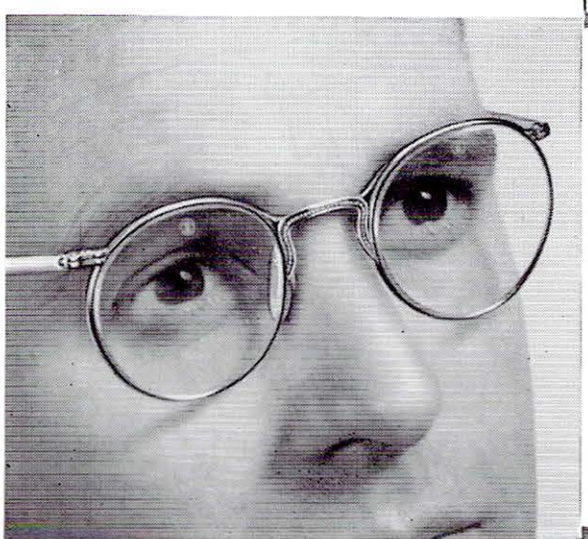
In the case of shops not so exclusively occupied, heavy capital investment in equipment so specialized would not pay. For this reason you can be sure that parts made in such shops cannot give you ALCO values. When you buy genuine ALCO parts you know they will give you safety and service—the greatest possible value per dollar! American Locomotive Company, 30 Church Street, New York 8, N. Y.

American Locomotive

Alco

THE MARK OF MODERN ENGINEERING

the slightest eye-injury COSTS MORE



than the goggles that can prevent it

Typical records indicate that even the slightest of eye-injuries costs (in lost time, idle machine time and medical attention) approximately $15.00. The Society for the Prevention of Blindness estimates that *ninety-eight per cent* of these injuries can be prevented by the use of safety goggles (averaging in cost $1.50 a pair). What piece of plant equipment costs so little and returns its cost so many times?

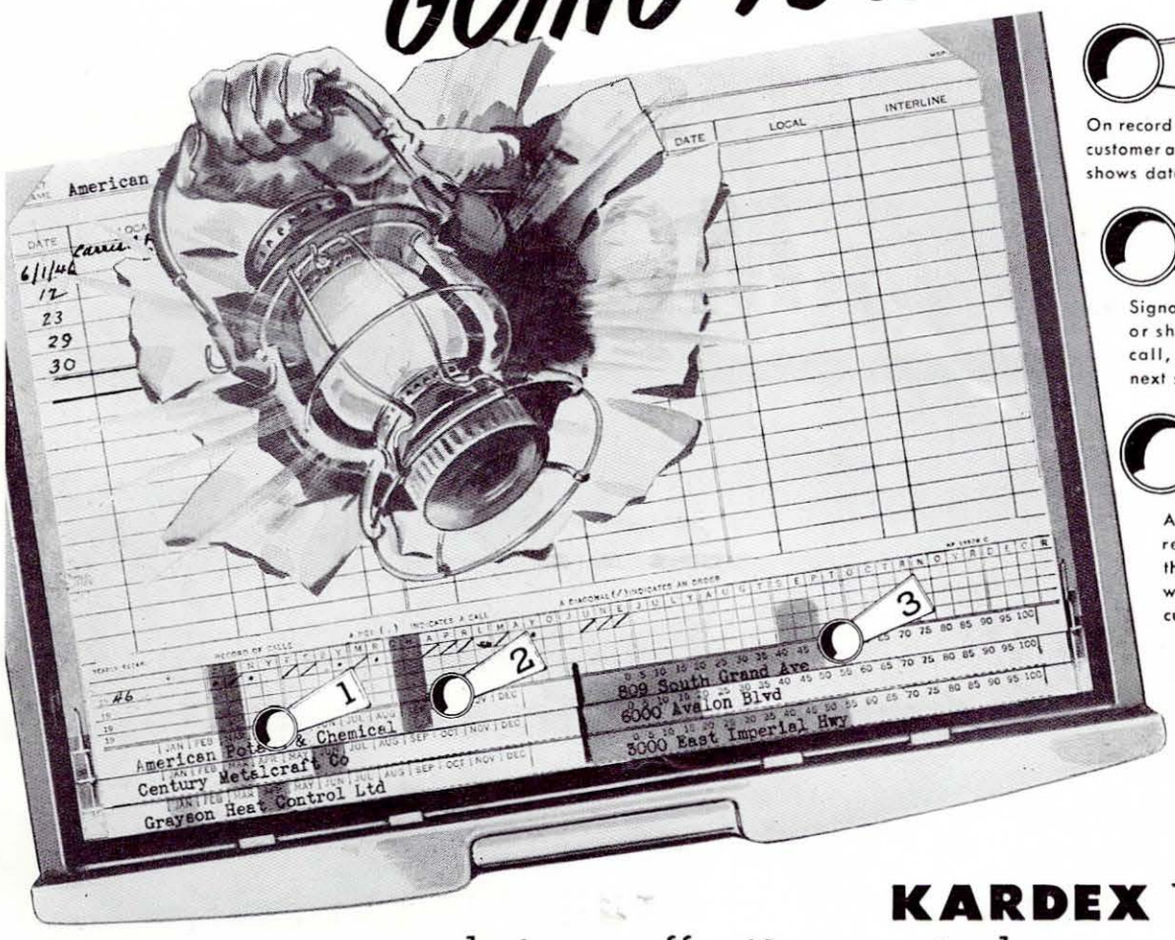
Let your nearest A-O Safety Representative show you the *complete* story.

A-O Safety Goggles Safeguard the Eyes of Industry

American Optical COMPANY — *Safety Division*

SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

Tomorrow's Traffic... GOING YOUR WAY?



1 On record visibly indexed by customer and prospect, signal shows date of last shipment.

2 Signal of a second color shows date of last call, or if preferred, next scheduled call.

3 A visual "chart" of results comparing this year's business with last year's to current date.

KARDEX Visible brings effective control to Freight and Passenger Solicitation

A glance at Kardex provides the Traffic Official with the current history of solicitation effort and results obtained . . . by customer . . . by representative . . . by territory, as desired.

Remington Rand offers you its "Systems" facilities in providing the right answer to the question of tomorrow's traffic.

For many years we have cooperated with officials in every branch of industry in developing the record controls needed for effective and productive sales management.

In this field, no other form of record is as widely used as our Kardex System, with its characteristic "tell-all" visible margins and Graph-A-Matic signal control.

As this suggested form of record indicates, Kardex centralizes all needed facts about each prospect and shipper in one quick-reference record. Solicitation activities and results obtained are graphically revealed for fast, accurate analysis and intelligent direction of representatives' and agents' activities based on up-to-date facts.

Through our Systems Transportation Records Department, we shall be glad to make a study of your particular needs, and to suggest the most efficient methods of meeting them—at the lowest possible cost. Call any Branch Office—or write to us in New York.

SYSTEMS DIVISION

Remington Rand

315 Fourth Avenue, New York 10, N. Y.

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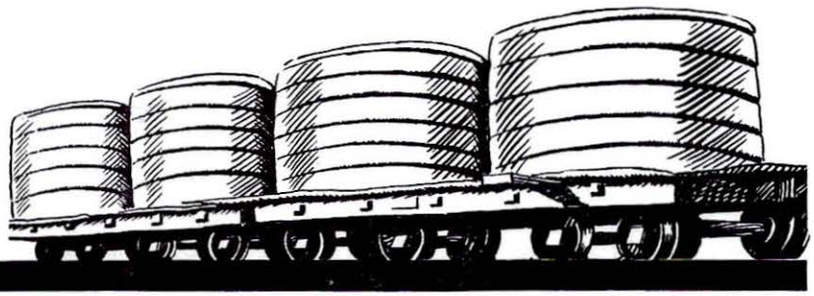
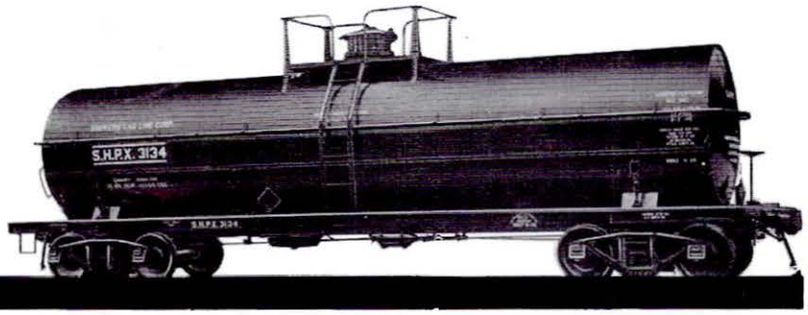
TANK CARS

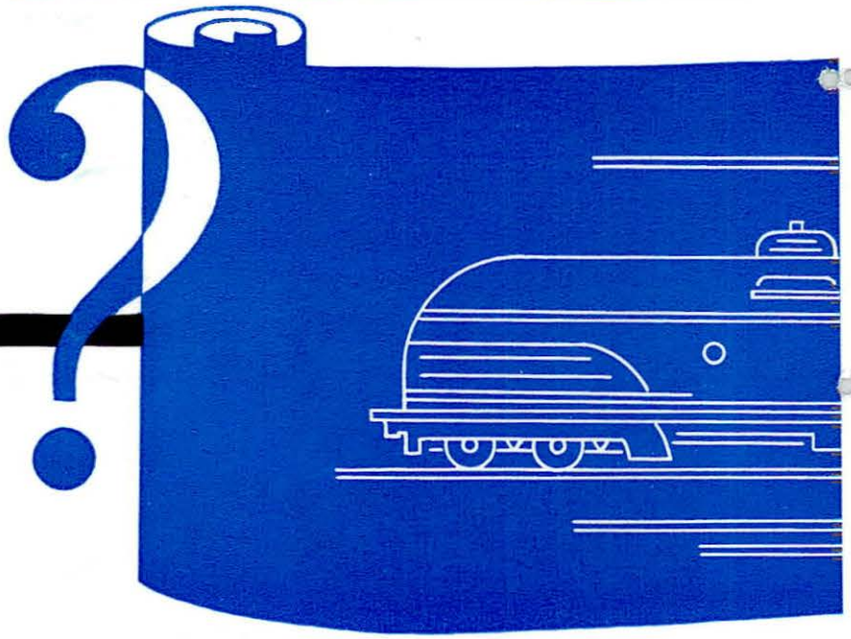
Yesterday



Today



Tomorrow

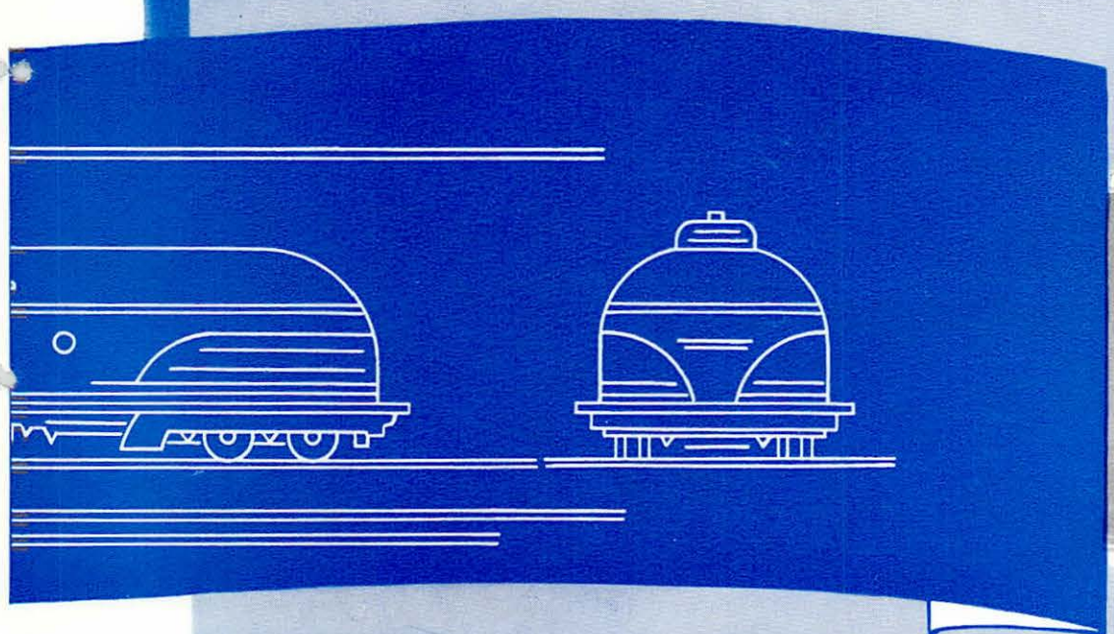


a.c.f. AMERICAN

Yesterday... Remember those rough wooden tubs on a flat car for the transportation of crude oil? That was a long time ago!

Today... The finest on the rails is the A.C.F. all welded tank and underframe for stronger, longer life. Tanks are available for all types of commodities... for every transportation need. Special tanks and linings as—alloy steel or aluminum for nitric acid and nickel-clad for caustic soda—are engineered to specific commodity needs.

Tomorrow... Who knows what the future may bring? But no matter what the requirements may be in the tank cars A.C.F. will meet every need with the same forward-looking ingenuity.



Whatever is required

A.C.F. will build

... and build WELL

CAR AND FOUNDRY COMPANY

New York · Chicago · Washington · St. Louis · Cleveland · Philadelphia · Pittsburgh · San Francisco

Mr. Smith is from Missouri!

Right now, Mr. Smith is inspecting the "balanced construction" of a Rosemary Tablecloth. . . . His glass reveals the interweaving of the fine, native cotton yarns, each thread impregnated with the life-giving qualities of the permanent Basco finish. He examines, too, the distinctive cross-stitched hem, delicate as hand-needlework, yet sturdy enough to withstand daily use and frequent laundering.

But Mr. Smith also knows that no mere physical examination of table napery can reveal all the attributes of Rosemary-Basco Tablecloths and Napkins (made *right* in America) which have made them the choice of the nation's hosts from coast-to-coast!

Yes, Rosemary Napery, in a variety of attractive patterns as well as in name-woven and crested designs, is skillfully and expertly engineered to meet the exacting requirements of hotels, restaurants, railroads, hospitals, clubs and all other types of public dining service.

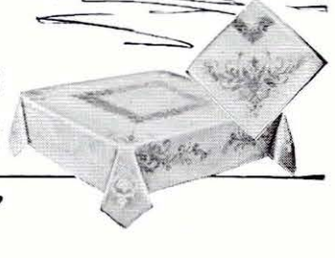
ROSEMARY SALES

A Division of Simmons Co.

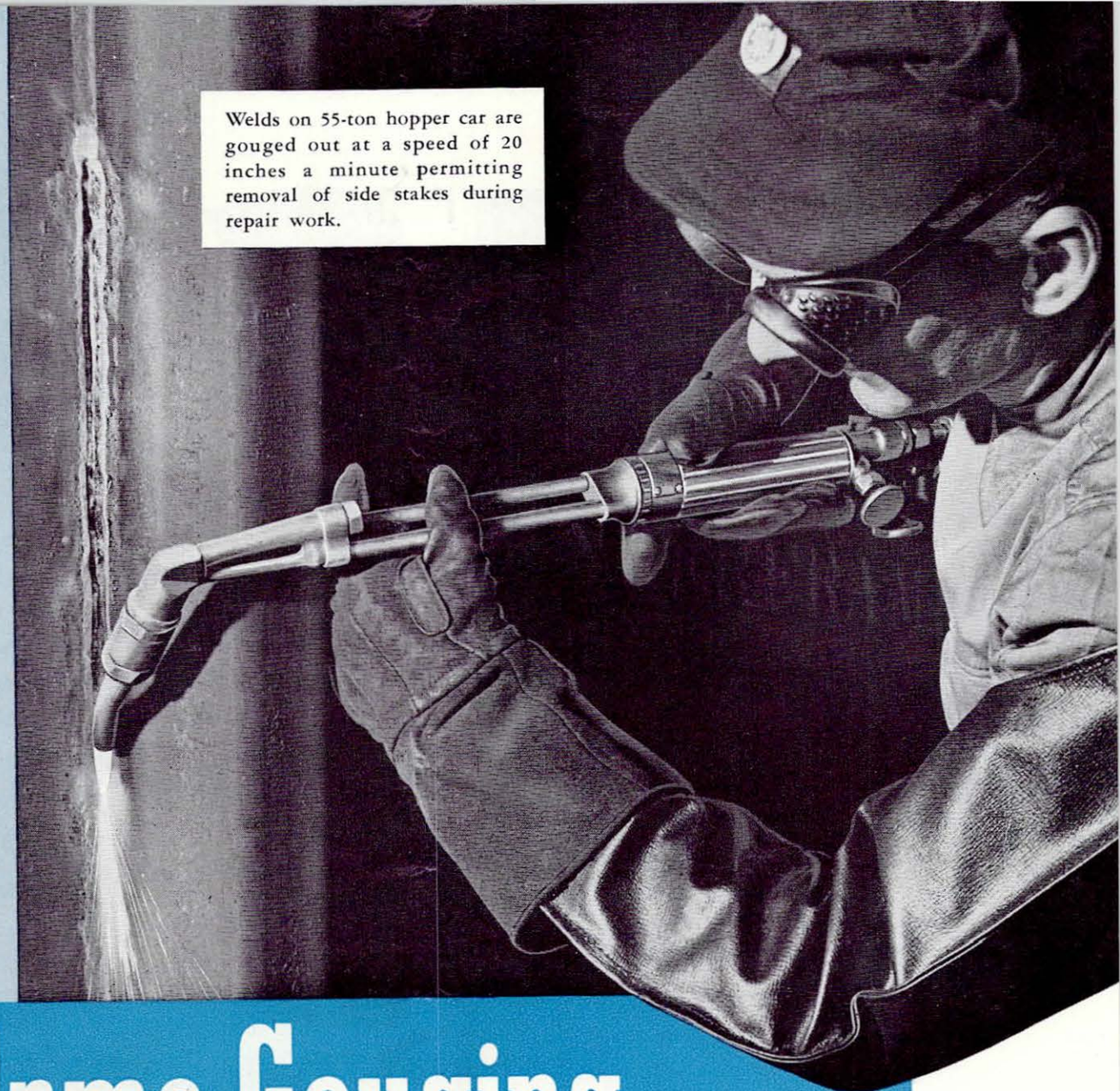
40 Worth St., New York 13, N. Y.

Rosemary

TABLECLOTHS · NAPKINS
TRAY COVERS · DAMASKS



"Napery of the Nation"



Welds on 55-ton hopper car are gouged out at a speed of 20 inches a minute permitting removal of side stakes during repair work.

Flame-Gouging

A FAST WAY TO REMOVE EXCESS METAL

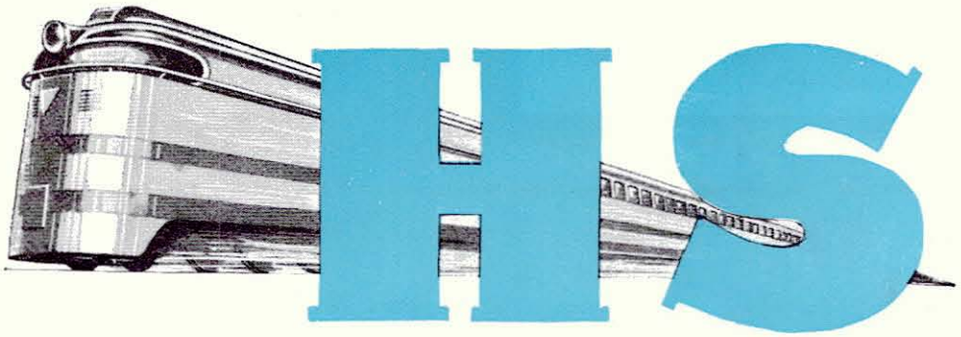
Removes welds at high speeds. Grooves weld joints to receive backing-up welds. Prepares plate-edges for welding—quickly, economically. Opens up cracks in castings for welded repair. Cuts clean, smooth grooves in steel.

Ask an OXWELD representative about this quiet, easy-to-use gouging method.

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

OXWELD RAILROAD SERVICE

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS



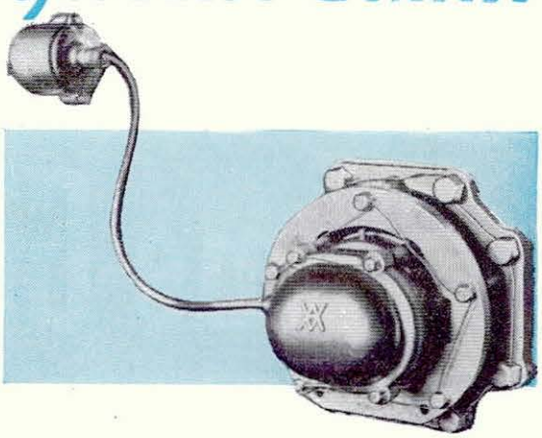
HSC

Electro-Pneumatic Brake

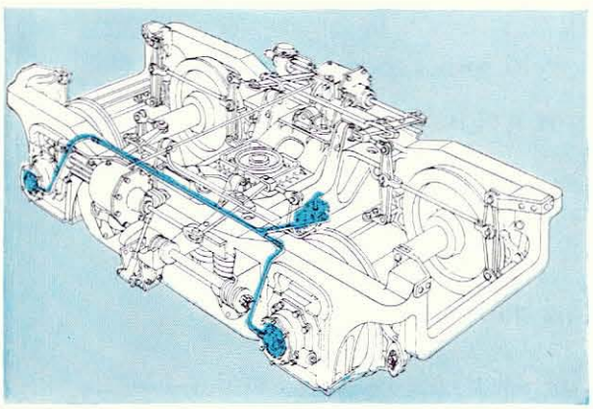
One of the surest ways of attaining that much talked about "passenger comfort." Even the best skilled engineman finds the "HSC" electro-pneumatic brake an aid to smoother train handling. And it closes the gap between the artist and the student so that the less experienced quickly acquires the touch of mastery in the art of train handling. Slack control, precision stops, the smooth slow-down — these are the things that spell "passenger comfort" as attained with "HSC" electro-pneumatic brakes.

with Speed Governor Control

Tremendous braking forces, required for stops from high speeds, respond instantly to the demands of the engineman. He can exercise every judgment and employ the forces required at any speed as his experience dictates. But, his every action is supervised by the speed governor to proportion forces employed to the speed — insuring the availability of the required high forces at high speeds, but tapering them off for the medium and lower speeds.



and "AP" Decelostat



Standing guard on the wheels is the "AP" *Mechanical* Decelostat. It instantly detects wheel slip resulting from subnormal rail adhesion. If wheel slip occurs the Decelostat momentarily *softens the brake* on the offending wheels before wheel slip can develop into a slide. A recent survey of installations on three different railroads shows an operating total of *over four million Decelostat miles without any slid wheels.* This covers July to March operation — summer to autumn through winter to spring again.

WESTINGHOUSE AIR BRAKE CO.

WILMERDING, PENNSYLVANIA

Railway Age

With which are incorporated the Railway Review, the Railway Gazette, and the Railway Age-Gazette. Name registered in U. S. Patent Office.

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What Lies Ahead for Crosstie Industry ***130***

Discussion of the industry's future from the viewpoint of the engineer, the economist and the producer made up the program of the twenty-eighth annual meeting of the Railway Tie Association held recently in Cincinnati.

Tie Renewals Down 8.4 Per Cent ***137***

Reflecting materials and labor shortages, only 43 Class I railroads in the U. S. and one in Canada inserted more ties per mile in 1945 than in 1944.

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PRINTED IN U. S. A.

"UNION" Cab Signals

speed the "Hiawathas"

The "Hiawathas" are leaders of a great fleet which plies the "Milwaukee Road" between Chicago and Minneapolis. They are luxuriously comfortable trains operating over this 431-mile double-track route at speeds up to 100 mph—at average speeds better than 60 mph, even with eight scheduled stops enroute.

Performance like this results in no small part from "Milwaukee" enginemen receiving indications, by Cab Signals, which reflect track and traffic conditions ahead. Such indications are guaranteed by "Union" Cab Signals, because they are continuously controlled and instantly responsive. Furthermore, they are located inside the locomotive cab, where adverse weather conditions cannot affect their visibility. Enginemen can immediately increase speed as a less restrictive condition ahead develops—regardless of the train's position in the block! On the other hand, indications of more restrictive conditions ahead also reach the enginemen instantly, assuring greater safety and efficiency, and reducing wear and tear on equipment.

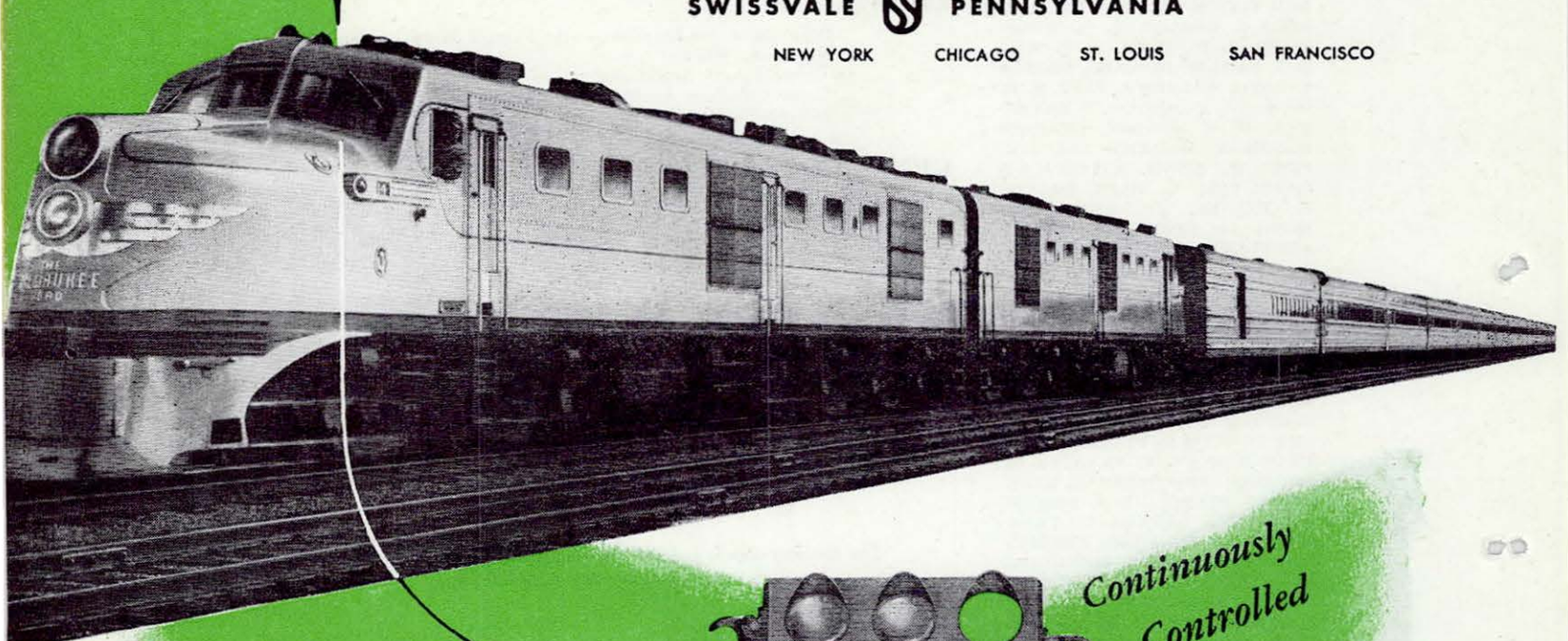
"Union" Continuously-Controlled Cab Signal Systems are in service on steam, Diesel-electric, and electric territories, and they can be used on steam locomotives operating over electrified territories. They are applicable to single or multiple track signaling, including C.T.C., using either AC or DC track circuits.

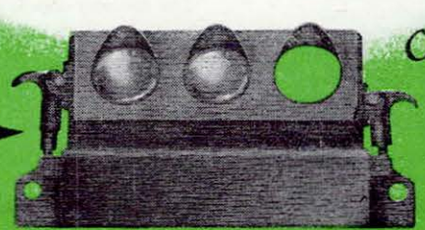
"Union" Engineers will welcome the opportunity to study your railroad's operating conditions with an eye to their improvement through "Union" Continuously-Controlled Cab Signals. Write, or call, our nearest district sales office.

UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO





Continuously Controlled

Constantly Visible

The Week at a Glance

OPPOSED-PISTON DIESEL: The recent purchase by the Union Pacific, after varied and rigorous tests, of the first 6,000-hp., three-unit Diesel-electric road locomotive turned out by Fairbanks-Morse has focussed general interest on its design and performance. Specifications and descriptive details appear in this issue in the article on page 126. Using General Electric electrical equipment, this road locomotive is distinctive for its employment of the 10-cylinder opposed-piston Diesel engine, a new use of this type of power plant. Each engine delivers 2,000 horsepower net. One of the advantages claimed for this design is its relative compactness, shown in one way by the development of more power per unit of locomotive length than other types.

●

FEWER TIES REPLACED: The annual summary by railroads of crosstie renewal statistics appears this week on page 137. Despite the unprecedented war traffic and its inevitable effect on tie life, replacements in 1945, for various reasons, especially labor shortages both on the railroads and in the woods, were 8.4 per cent under 1944. Nevertheless, the proportion of treated ties inserted was greater last year than previously, and 66 roads used them exclusively.

●

SIGNALING FOR SPEED: Where centralized traffic control cannot be installed, modern automatic block signals in conjunction with spring switches make it possible to authorize train operations by signal indication rather than timetable and train orders, and so to obtain a maximum saving in train time for this type of signaling. A pioneer in the use of this method of operation—the Central of Georgia — was faced with an urgent need to increase the capacity of a 120-mile single-track line at a time when war restrictions prevented its purchase of C. T. C. equipment. With the installation of automatic signals and spring switch mechanisms at 41 passing track switches it was possible to keep trains rolling, however, and substantial reductions are reported in the time required to get them over the road. Details appear in an illustrated feature article.

●

MORE PROOF OF NEED: If the Interstate Commerce Commission can be convinced by figures that the railroads are in a most precarious financial position, from which the only egress is larger revenues resulting from higher freight rates, the figures are being presented to it in the Ex Parte 162 hearings now going on in Chicago. Except that they are later and more detailed, these figures only repeat the evidence the railroads offered the commission last spring, the most optimistic interpretation of which, by the commission's own staff, spells practical ruin for railroad credit on the present rate basis. But concern over the present and prospective welfare of privately-owned, privately-financed, privately-managed railroads has not invariably motivated decisions made in Washington affecting the industry, and the commission majority's recent verdict that the railroads must use their war profits to pay current bills, rather than to rehabilitate their properties and prepare for the future, is possibly more significant of its controlling philosophy than the patience with which it receives the statistical evidence of their accelerating impoverishment.

●

ONCE IS NOT ENOUGH: When a drop of water falls on a man, he barely notices it. But when drop follows drop, regularly and unremittingly, he becomes acutely conscious of what is going on. The same is true of facts, as the radio "commercial" composers well know. A statement once seen is likely to be quickly forgotten, even before its significance is grasped. The same statement presented over and over, in print, in talks, in pictures, sooner or later will make a lasting impression. This is a human peculiarity that the railroads cannot afford to ignore in their efforts to convince their employees (1) that their profits are nowhere near so great as the employees imagine, and (2) that it is to the employees' own interest to demand public policies that will foster, rather than impair, the railroads' economic health and ability to survive. The leading editorial this week emphasizes the responsibility that railroad managements have—particularly in these parlous times—to see to it that instruction of their employees about the financial and economic situation of their companies is carefully and persistently and effectively executed. A pretty booklet once a year is not enough, a by-line article in the employee magazine is not enough, if the impression is to be sufficiently lasting to be reflected in the employees' attitude toward their jobs, toward union leaders whose concern for the profitable functioning of the business is not always noteworthy, and toward politicians whose policies so often are shaped by the pressure of "labor" votes.

●

FEWER HIGHWAY CROSSINGS: As substantial taxpayers, the railroads have no reason to enthuse over federal subsidies benefiting their airway, waterway and highway competitors. But the largesse is being poured out whether they like it or not. That being so, they should lose no time, an editorial suggests, in taking the little advantage they can of the generous appropriations for road improvements, which do make some provision for grade crossing separations.

●

NOTED IN THE NEWS: Pullman conductors have been ordered to strike, the next move apparently being appointment of an "emergency board." . . . P. C. Putnam has been named consulting engineer to the Car Institute. . . . The short lines have asked the commission to reduce the per diem rate to 95 cents. . . . O. D. T.'s appropriation has gone through the mill, giving it funds to operate through next April. . . . The Retirement Board's annual report shows almost seven million persons now "covered" by the special railroad employee benefit legislation. . . . Pacific Fruit Express plans to order 3,000 more reefers.

QUARTER-CENTURY RECORD: Not for 25 years has the box car situation been as critical as it is now. The authority for this statement is Chairman Kendall of the A. A. R. Car Service Division. Moreover, he says in his current report on the transportation situation, reviewed this week in the news columns, no let-up is in sight. Deliveries are behind on cars on order, bad order cars can't be put in shape as fast as they should be because of shortages of material and skilled workmen, and loadings are making new highs. Complaints from shippers are numerous and emphatic, and have been supplemented by accounts in the press of blocked elevators and of industrial plants closing down for lack of cars to transport their output.

●

SPEAKING OF TIES: At the recent annual meeting in Cincinnati of the Railway Tie Association the future trends of crosstie prices, production and treatment were discussed from various angles. Among committee reports outlined in this issue, one dealt with studies of the use of urea to coat the surface of green ties before seasoning as a means of reducing checking and splitting. One of the papers discussed the advantages which the Atlantic Coast Line has realized from the use of 9-ft. ties in main track. Others put emphasis on the relationship between tie prices and tie production, pointing unmistakably toward bigger bills for the railroads to pay.

●

WHEELING CONTROL: If the Interstate Commerce Commission follows the recommendations of its examiner's proposed report (summarized in the news pages), it will permit the Nickel Plate to buy the C. & O.'s holdings of Wheeling & Lake Erie common stock as a step toward acquiring direct control of the latter. But the sale would not be on the terms agreed on by the parties to the deal, that is, the present market price, but instead would be at cost to the C. & O. The examiner contends the higher current price, if paid, would result in discrimination against Nickel Plate minority stockholders, but the C. & O.'s chairman asserts that that road took the risk, and therefore is entitled to the profit.

●

DEADLINE: With the O. P. A. rumpus and war profit scandals making the front pages of the papers, Congress has been whipping things into shape to go home to look after election prospects. Three pieces of legislation particularly important to the railroads have been slated for action before adjournment (or recess)—the Bulwinkle bill to exempt I. C. C.-approved joint action from anti-trust crusades; the Reed and Wheeler bills to modify reorganization methods; and the Crosser bill to give railroad employees still bigger "social security" benefits (and the railroads still bigger taxes). Whether all three will be acted on, what form that action will take, and what the President's attitude toward them will be, if they get through Congress, are questions to which the answers were still in doubt when this issue went to press.

CABLE LIFE "PRE-VIEWED" BY YEARS OF EXPOSURE

Okonite's Proving Ground Duplicates Actual Operating Conditions

All kinds of weather and four kinds of soil provide thoroughgoing performance "pre-views" at the cable proving ground at The Okonite Company's Passaic, New Jersey plant.

About to start its ninth year of carefully-recorded cable service studies, this unique *outdoor laboratory* is dedicated to evaluating the useful life of all types of insulation both above and below ground under all severe operating conditions. Believing that time and time alone is the only true means of determining what a cable will do, Okonite engineers put principle into practice with the realistic creation of actual service conditions rather than artificial "accelerated aging"

Buried directly in various types of earth, pulled into conduit or installed overhead — network, control, primary distribution and portable power cables are constantly operating under controlled conditions of temperature, voltage and loading.

At specified intervals they are taken up, sections cut from the cable and detailed tests conducted under the independent supervision of The Electrical Testing Laboratories.

Test Conditions

Cables under test are installed in four concrete troughs, each 50 ft. long by 4 ft. wide and 4 ft. deep. These troughs, open at the bottom, are each filled with a different type of soil:

1. Top soil saturated with corrosive water from a manhole.
2. Soil with a layer of manure over the cables to simulate conditions of decaying organic matter.
3. A mixture of 99 lb. of sand and 1 lb. of lime which is subjected to a periodic pH test and maintained highly alkaline.
4. Soft-coal cinders regularly wet with a sulphuric acid solution to render them positively acid. Given a regular pH test and acidity maintained.

Cables in each trough are in two layers, Spacing of cables was selected to allow control and signal cables to be slightly warmed by network cables which are subjected to current loading. The majority of cables are buried between 30 in. and 36 in. deep.

Buried Since 1937

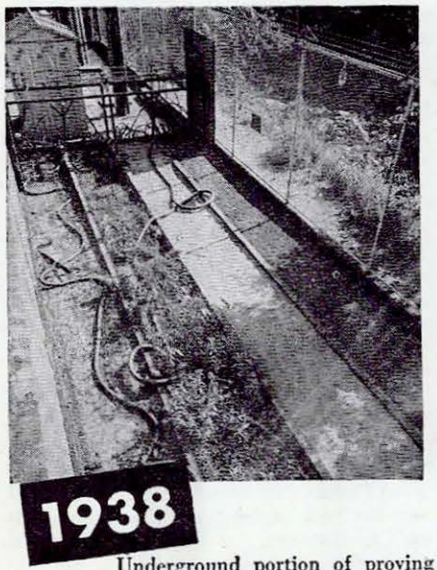
Four main types of cables are installed in the troughs in the proving ground.

1. Network cables. Nine cables representing all constructions, including fibrous and rubber covered; 250,000 circ. mil. single-conductor, insulated for 600 volts, operating at 120 volts and loaded in cycles nine hours a day, five days a week, to give a copper temperature of approximately 60 deg. C. Network cables in all troughs are in series across 120 volts.
2. Control cables. Eleven seven-conductor, rubber insulated cables with various types of metallic and non-metallic sheaths in each trough energized at 120 volts but not loaded.
3. Underground primary distribution cable. Four different commonly-used types of 5-kv. non-metallic sheath cable in each trough energized at 7.6-kv. but not loaded. Each trough contains 50-ft. lengths of each type of cable.
4. Portable high-voltage cable. Two types, shielded and non-shielded, 12.5-kv. three-conductor, dredge or shovel cables run at random in the yard on the top of the ground and moved each week. Two types are connected in series and ends connected to 12.5-kv. busbars.

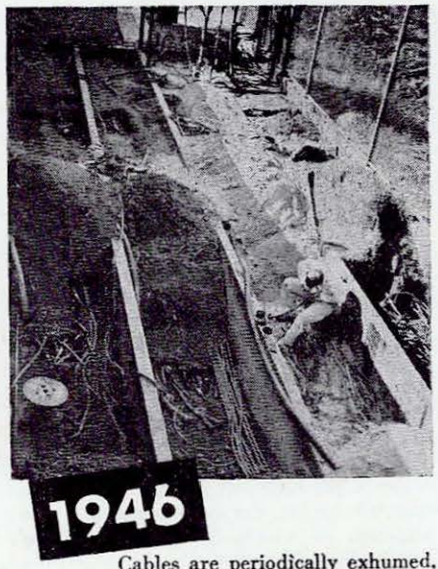
In addition to the underground cables, two 30-ft. poles have been erected carrying more than a dozen types of insulated aerial cable and line and tree wire energized at 7.6-kv. from the bus-bar structure. Interconnecting these overhead "circuits" are three conduit risers on each pole containing four test cables each.

As tests are tabulated, valuable trends have already been disclosed. While eight years are too short for final conclusions, proving-ground results have indicated significant tendencies. For example, in the case of exposed cables, Okolite-Okoprene (Patent 2,312,058) is showing to advantage over the fibrous type of rubber insulated cable which has suffered braid deterioration, tape erosion and corona cutting.

This is but one instance — one forerunner of benefits to come. As time goes on and more and more facts accumulate, Okonite engineers will be guided to a greater degree by this recorded test data, and will pass along greater service-life knowledge in the form of improved electrical wires and cables. The Okonite Company, Passaic, New Jersey.



Underground portion of proving ground at end of first full year of operation.



Cables are periodically exhumed, sections removed, ends sealed for reburial.

OKONITE SINCE 1878 insulated wires and cables 4124

RAILWAY AGE

Information for Employees—the Printed Word Is Insufficient

In March this paper published the results of an opinion survey which it had sponsored to ascertain the attitude of railway employees toward their industry and their knowledge of its economic position. Readers will recall that this survey revealed employees to be well disposed toward the industry but quite poorly informed regarding its finances—in particular, that they believe the business to be vastly more profitable than it is. Misinformation as to earnings is about the most dangerous misunderstanding that could exist—because, obviously, an employee who believes his employer is rolling in wealth will not be unduly modest in his demands for increased wages, more "social security," and costly improvements in working conditions. For employees to make demands beyond the capacity of their employer easily to pay is just as harmful to them as it is to the employer—because, if acceptance of such exactions is forced upon the employer, lack of funds will inevitably necessitate a reduction in forces.

A Misconception Widely Held

Railway employees are quite evidently not aware that, for many years, total wage payments by the railroads, plus the railroads' share of payroll taxes, have tended to remain at about 50 per cent of railroad gross revenue minus all taxes but the payroll tax. (See the issue of March 16, page 535, for a tabulation of these figures.) Increases in wages, that is, have been invariably accompanied by proportionate decreases in employment; or by the failure of employment to increase in proportion to the favorable factors working toward such an increase.

The lack of knowledge by employees of the economic situation of their employers is not peculiar to the railroad business. The Opinion Research Corporation, which conducted the survey for *Railway Age,* has made similar surveys of employee opinion in the manufacturing industry, and finds that those employees, also, have the same exaggerated idea of the profits of their employers that prevails in the railroad industry. As a consequence of these disclosures, alert employers in many fields, including the railroads, are intensifying their efforts to make available to employees the basic economic and financial facts about their businesses.

While a number of novel methods have been used to this end (e. g., the quiz leaflet issued by the Baltimore & Ohio, reported in the July 6 *Railway Age,* page 19), principal reliance has so far been placed, particularly by the railroads, in specially prepared "annual reports to employees," in which the company's earnings and expense figures are set forth graphically and in simple language. Such reports are doubtless a desirable adjunct to any program of imparting economic information to employees, but the Opinion Research Corporation has discovered by scientific study of the effectiveness of various means used to convey economic information that *the printed word alone will not do the job.* We are not at liberty to reveal in detail the Corporation's findings with respect to the most effective methods of imparting this information, since its specific disclosures constitute one of the reports in its current "index" service, by which managements of subscribing industries are kept up-to-date on public and employee attitudes on a wide range of vital questions affecting industry policy.

It may be said in general, however, that the investigation indicates that articles on earnings in company magazines are insufficiently effective in conveying such information as this, and that special financial reports to employees are not, by themselves, adequate to the job. A meeting with a speaker, equipped to visualize his message by slides or films, will "register" more deeply than will the unaided printed word. Repetition of the story throughout the year, using all available methods of communication, is the only program likely to achieve adequate results.

Organized Labor Holds the Whip

Such revelations should constitute a warning to managements concerned with this problem, because if this job is done vigorously on the railroads, but by ineffective means, the resulting failure is not unlikely to lead to the conviction that the job cannot be done at all. Such a conclusion would be tragic—because free enterprise cannot work without profits sufficiently large to attract a steady supply of new capital, and the votes which control government policy are not likely to permit such profits to be earned if those who possess the votes pos-

sess nothing but misinformation as to the size and function of profits.

What is involved here is not a campaign of propaganda to induce employees to act in the interest of management and owners, but objective education in its truest sense—without which employees cannot act intelligently and realistically even in *their own* interest. The voters, and especially the closely-knit minority represented by organized labor, come pretty close to having the nation's economic machine at their mercy. Unless they can be induced to learn quickly at least a few of the operating rules and the machine's basic requirements as to fuel and safe speeds, their ignorant use of their great power will be as much a menace to their own safety and that of everybody else as a 10-year-old boy would be at the throttle of a locomotive.

Burton K. Wheeler

During his long service in the Senate Burton K. Wheeler has been more often an opponent of the railroad industry than a friend. Nevertheless, there will be few thoughtful railroad people who will rejoice at his rejection last week by the voters in the Democratic primary in his state—since it is evident that he was punished for his virtues rather than for his sins. The successful candidate won, not because Senator Wheeler was too far to the "left," but because he was too far to the "right" to suit the Democratic electorate in his state. The victor won with the support of the type of voters who are controlled by the C. I. O.-P. A. C., that is to say, by a coterie which gets its political philosophy from the Muscovites rather than from the American tradition.

A radical politician—whose radicalism is derived from the grass roots of America—is a different breed entirely from one who is radical because he does not know America or is a follower of foreign-born agitators, and is merely continuing over here a fight against "the bosses" who he has not learned are not at all the kind of people that are given that designation in Central and Eastern Europe.

Senator Wheeler belongs to the native type of radical. A fight between his type and so-called conservatives involves little that is sinister to society, because, even when such a radical is wholly successful in his program, his opponents do not go to the gallows or to jail—as they do in countries where political differences are fought on a basis of class warfare. Differences between such radicals as he and the conservatives are matters of degree rather than of kind. Senator Wheeler showed that his purpose was reform rather than revolution when he clashed with President Roosevelt on the Supreme Court "packing" issue. He did his best to maintain an independent judiciary, rather than one composed of political schemers directed from the White House.

In striving to correct what he deemed to be railroad abuses, especially abuses in financing, Senator Wheeler was not always as scrupulous as he might have been to limit his action to salutary chastisement rather than to irremediable mayhem, sometimes of innocent parties. Few will doubt, though, that, however mistaken he may at times have been, remedial action or a desire to see the mighty squirm was his main purpose—and not the hope of doing permanent injury to free enterprise in transportation.

Senator Wheeler's defeat is ascribable, probably, as much to his record on international issues as to his views on domestic policy. Because of his extreme "isolationism," a good many people have worked for his defeat who, otherwise, would have supported him. We shall never solve our domestic problems, and thus retain our military and economic superiority relative to that of other nations, however, if voters are going to let differing views on international questions be their primary criterion in selecting candidates at the polls. Even a Communist can occasionally be correct on international issues—when, temporarily, the objectives of this country happen to coincide with those of Russia—but that is a mighty poor argument for putting such a person in a position of power over domestic affairs.

In sum, Burton K. Wheeler has his points. While his successor as head of the Senate interstate commerce committee could and should do a better job than he has done, it would be just plain foolish for anybody who believes in private enterprise in transportation to expect any genuine or lasting good to come from the defeat of Senator Wheeler by the anti-American or hyphenated American forces which seem to have been the principal instruments of his undoing.

Travel-Hungry Americans

The current vacation season is proving the predictions that Americans are travel-hungry. Practically every resort is not merely crowded, but is actually bulging at the seams. As a matter of fact, resort owners in many sections of the country report they could do twice their present business if they had the capacity. All of this is in spite of a distinct advance over pre-war prices practically all along the line.

There are numerous statistics to support this generalization, but those dealing with Yellowstone National Park, a traditional American vacation spot for decades, are perhaps the most startling and informative. Nearly four times more vacationists are crowding into the park this year than visited it in 1941. Every railway coach and sleeper is filled to capacity almost every trip and the manner in which tourists in private automobiles are clogging the highways and the park facilities is indicated by the following figures, showing total automobile arrivals for four days in June:

	1946	1941
June 15	4,560	1,073
June 16	6,543	1,169
June 17	5,267	1,270
June 18	5,678	1,657

There can be little doubt that the railways in their unprecedented ordering of streamlined trains since the war had the right idea. After a starvation vacation travel diet for years, Americans are holiday-hungry. Despite the fact that the supply of new automobiles so far has been a mere dribble compared with the demand, they are entrusting themselves to their old cars and taking to the highways. But there are a sufficient num-

ber of more prudent travelers who prefer the safety and convenience of the rails to keep the trains crowded.

It is definitely up to passenger traffic officers to realize upon the travel demands of these people. They are eager to go places and, given proper *fares, service and equipment,* it seems certain that a sufficiently large percentage of them can be retained for train travel to continue to make passenger revenues an attractive part of the railways' gross income.

Grade Crossings Again in the Limelight

The problem of highway-railway grade crossing accidents has slapped back at the railroads with renewed vigor, after some respite during the war years. According to figures released by the Interstate Commerce Commission, grade crossing accidents throughout the country numbered 3,539 in 1945, an increase of 7.58 per cent over the full war year 1944, indicating the beginning of a trend that could easily get out of hand as millions of new cars get back on the highways and train speeds are further increased, unless every effort is made to control it.

No other interested group realizes what the situation is better than the railways and, insofar as it lies in their power, acting individually and collectively, they will do their best to control the trend. To this end, as is already in evidence over the country, the railways, through the Safety Section of the Association of American Railroads, have joined with the National Safety Council in a huge crossing safety campaign, utilizing every medium of publicity and education to bring conditions forcefully and repeatedly to the attention of national, state and local officers and the public generally. But this campaign needs more than constant and dramatic publicity—it also calls for reducing the number of crossings, by resistance on the part of the railroads to the opening of new crossings; by efforts to close unnecessary and little-used crossings; by the elimination of the more hazardous existing crossings through highway changes or grade separations; and by the most careful scrutiny of all of the factors affecting safety with respect to the crossings that remain, including increased sight distance, improved crossing surface, and adequate methods of warning or protection.

No final solution to the accident problem at many of the more important, heavily-traveled crossings of the country can ever hope to be achieved without the separation of grades.

It follows that the railways, working with the federal and state governments, should seek to revive as rapidly as possible the large programs of grade crossing separation work halted by the war, taking advantage of the federal funds previously appropriated and still available for this purpose, and the new funds available under the more recently enacted Federal-Aid Road act, authorizing appropriations for the post-war construction of highways and bridges, "including the elimination of hazards at railroad grade crossings." Federal aid to transportation is a device of questionable social and economic virtue, but the work has already been authorized —not for the benefit of the railroads but for that of highway users. Since railroad taxes are going to have to help pay for highway improvement, it is no more than just that a substantial part of this subsidy to highway transportation be expended in a manner to provide at least some incidental benefits to railroad movement.

Shortages of some essential construction materials, especially steel, will seriously limit extensive grade separations at the present time, but to the fullest extent possible this work should go forward, while at the same time plans should be made for additional projects which can be moved into the construction stage when possible. Meantime, the installation of suitable warning and protective devices at many of these crossings should proceed, wherever possible with the cooperation of state and local authorities.

Indirect Savings Are Important Too

The number of units of Diesel-electric motive power now in service on many railroads is reaching a magnitude where potential economies of this power which were of doubtful actuality when the total number of locomotives was small are now assuming definite reality. In evaluating the operating costs of motive power, and in making comparisons between Diesel and steam, it is customary to consider the major items of operating expense such as fuel, wages, maintenance, lubricating oil, etc. But there are other factors which must now enter into the calculations.

Take the matter of economy in the use of fuel, for instance. In most discussions of this subject the savings have been looked upon as those which may be related to the relative efficiency with which either a steam or Diesel-electric locomotive uses its fuel, the total amount of fuel used as related to some unit of service such as gross ton-miles or passenger car-miles, and the cost of the fuel to the using railroad.

One railroad has now gone farther in a recent study of the economies effected as a result of Diesel operation. It has analyzed the savings from the reduction in the transportation, handling and storing of company coal for steam locomotives. This road found that a hopper car may require from four to six weeks, on the average, to make a round trip between the home line and the mines. With the capacity of the average hopper car at from 50 to 60 tons, it appears that such a car will provide from 500 to 800 tons of coal to the using road in the course of a year.

When the use of coal on a road or even on a division runs into the hundreds of thousands of tons it is easy to see that many hundreds of hopper cars may be eliminated or released for revenue service as a result of Dieselization. The monetary savings may vary somewhat from road to road, depending upon the fixed charges and the maintenance costs prevailing on the individual road. One company has estimated that the net saving in coal-handling costs, after deducting the costs of installing facilities for and handling Diesel fuel, has been sufficient to pay for the expense of installing modern facilities for maintaining its Diesel power.

Union Pacific Places First F-M Road Diesel in Regular Service

Fairbanks-Morse 6,000-hp. 3-unit locomotive is purchased after thorough tests in freight and passenger service

FOLLOWING extensive service tests on both freight and passenger trains in the western mountain and desert territory of the Union Pacific, this railroad recently purchased and placed in regular daily service the first Diesel road locomotive produced by Fairbanks, Morse & Co., Chicago. This locomotive has electrical equipment supplied by the General Electric Company and is designed to develop 6,000 hp. in three coupled power units.

Fairbanks-Morse Diesel road locomotive in service on the Union Pacific

For the earlier tests, the locomotive was geared as a combination freight and passenger locomotive to obtain a maximum speed of 75 m. p. h. Later for the tests in passenger service, the locomotive was operated with a higher gear ratio designed for speeds up to 102 m. p. h., suitable for fast-schedule passenger and streamliner trains.

The new Fairbanks-Morse road locomotive comprises two A-units with a cab and operating controls at one end of each and one B-unit with hostler controls only. The three 2,000-hp. units are coupled together for multiple-unit operation with an operating cab at each end of the locomotive which permits cutting off from one train and coupling immediately to one going in the opposite direction without turning the locomotive.

The general dimensions of the locomotive, weights and tractive force, are given in one of the tables. Each of the three locomotive units comprises a steel car structure mounted on two 6-wheel trucks, with motive power derived from a complete 2,000-hp. Diesel-electric power plant which supplies 600-volt electrical energy to traction motors geared to the two outside driving axles of each truck.

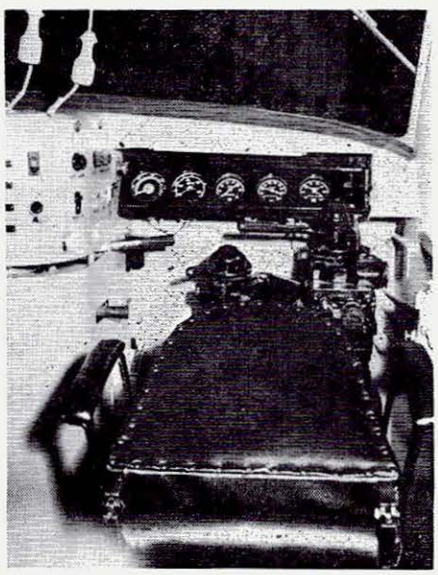
The underframe and body are of all-welded steel construction. The car body structure comprises a welded steel frame with metal-covered side closures applied in such a way as to prevent warping and weaving and so retain the smooth streamline appearance of the exterior regardless of stresses set up in the side frame. The underframe, built up of steel plates and shapes which have first been accurately cut to size with a power shear or flame-cutting equipment from a template or layout, is welded into a unit integral construction which meets the requirements of A. A. R. specifications for new passenger car equipment where these apply. The draft gear pockets are also of welded steel construction, built integral with the underframe. The draft gear is of the National rubber-cushion type, while the couplers are Titelock, automatic swivel-butt type.

The six-wheel trucks of the pedestal type are applied to each locomotive unit, with frames fabricated into an integral unit by the welding of accurately-cut shapes and plates. The truck parts consist essentially of two side frames, a cross tie at each end, two pedestal units and a swing bolster, carried by four semi-elliptic springs at each of four corners. The bolster is designed for 2¼-in. free lateral motion. Lateral shock on the trucks is cushioned by means of a spring-loaded arrangement in the truck pedestal jaws.

There are six wheels per truck, four drivers and two idlers. All are 40-in. rolled steel with 2½-in. thick rims, heat treated, A. A. R. standard contour. Clasp brakes on each wheel are actuated by a separate air cylinder. Wheel and axle assemblies are removable with the motor.

The complete truck, built by General Electric, is designed to give increased strength, decreased weight and reduced unit cost. Other advantages claimed for this type of fabricated truck include more accessibility for inspection and maintenance, increased stamina and reliability.

Each of the three power plants con-



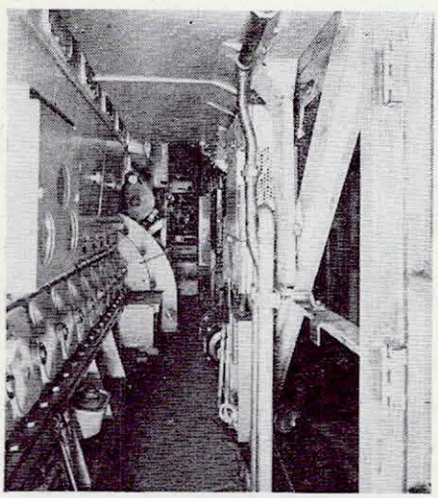
Operating controls and instrument panel in the cab

sists of a 2,000-hp. Diesel engine, direct-connected to an electric generator, four traction motors on trucks, wiring and controls.

Power Plant

The engines are of Fairbanks-Morse manufacture, 10-cylinder two-stroke cycle opposed-piston type. The feature of this design is the use of an open end cylinder in which combustion takes place in the center of its length between two pistons which move away from each other and in so doing uncover the exhaust and air inlet ports, thus eliminating all valves and cylinder heads. The two crankshafts are mechanically connected by means of a vertical shaft and bevel gears which transmit power from the upper to the lower shaft and maintain the proper timing between the upper and lower pistons. Thus with a pair of pistons in each cylinder, the 10-cylinder engine in reality becomes a 20-cylinder engine.

The features of the opposed-piston engine are compactness and simplicity of design; lower piston speed for given effective stroke; complete elimination of cylinder heads and valves with attendant possible over-heating and detonation difficulties; more efficient cooling of engine; smooth running and improved accessibility to parts requiring attention while en route; and reduced locomotive length per unit of power developed.



Relatively wide and clear side passageway in the cab

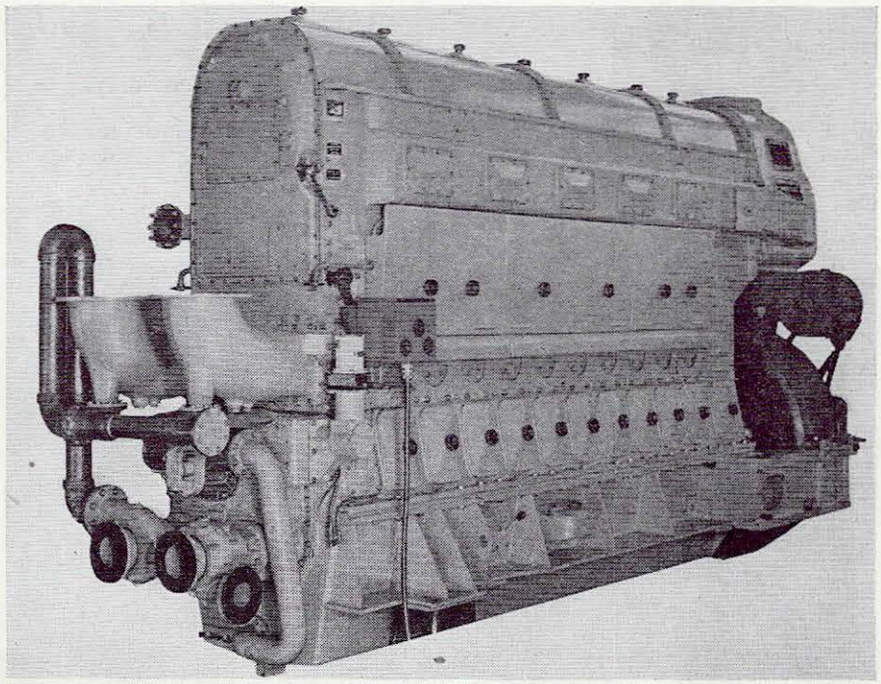
The cylinders have in-line arrangement, with 8½-in. bore and 20-in. stroke. The main frame or cylinder block is of welded steel construction. The engine is a complete self-contained unit with rotary type blower driven by the upper crankshaft; and fuel, lubricating oil and water pumps driven by the lower crankshaft. The air supply from the blower for scavenging and supercharging the engine passes into the cylinders through ports in the cylinder walls uncovered by the upper pistons while exhaust gases pass out in a like manner through ports uncovered by the lower pistons. Fuel is supplied by direct injection into the cylinder combustion space by two injection pumps and two nozzles for each cylinder.

As each unit of the locomotive contains only one complete power plant there is ample aisle space and head room around the engines, thus making it possible to perform ordinary maintenance readily and to do major overhauling without removing the Diesel engine from the cab. The location of the center of gravity permits placing auxiliary equipment so as to avoid over-crowding the aisles. The engine design permits maximum accessibility for inspection.

The main generators are of General Electric manufacture, shunt wound commutating-pole-type, supplying electrical energy at constant horsepower to the traction motors. The main frame is of rolled steel welded construction and the frame head of welded steel construction. A cradle type of mounting for the main Diesel generator-set maintains rigid and accurate alinement between the engine and generator.

Three auxiliary generators, all G. E., perform the following functions: One of these, of the amplidyne exciter type (AM-807), provides controlled excitation to the main generator. A 12-kw. auxiliary generator (Type GY-24-A) supplies power for battery charging, control and lights, maintaining a voltage of 76 volts from idle to full engine speed. The third machine of 51-kw. (Type GY-24-B) furnishes power for two radiator fan motors and two traction blower motors.

The traction motors are General Electric, Type GE-746, direct-current, series wound, commutating-pole type. Each is force-ventilated by means of a vertical, direct-connected, motor-driven, axial-flow fan. Advantages claimed over the conventional type of centrifugal blower are the saving of weight and space and better efficiency. Each of the four traction motors is single geared to its respective driving axle. They are mounted on the axles by two sleeve-type suspension bearings and on the truck frame through spring nose supports.



F-M 2,000-hp. engine-generator set before application to a locomotive unit

Power Plant Control

The power plant control includes a General Electric amplidyne exciter and electro-hydraulic power plant speed regulator. The amplidyne control maintains constant engine speed and prevents over-loading of the engine. If for any reason the power output of the engine should be decreased, the amplidyne control automatically unloads the generator so that the generator demand is proportionately reduced. This is done first through controlling the engine speed by regulating the amount of fuel to the engine and second, should this maximum

General Characteristics of Fairbanks-Morse 6,000-Hp. Diesel-Electric Road Locomotive

Horsepower, gross	6,300
Horsepower, net to traction generators	6,000
WEIGHT:	
With all supplies fully loaded, lb.	1,005,600
Total on driving axles (12), lb.	696,900
Total on idle axles (6), lb.	308,700
Width overall, ft.-in.	10-6
Height, overall, ft.-in.	15-1
Length, overall, inside knuckles, ft.-in.	194-6
Length between truck centers, each unit, ft.-in.	36-5
Length truck wheel base, ft.-in.	15-5
Min. radius of curvature (loco. only)	275 ft. or 21 deg.
Wheel diameter, in.	40
Gear ratio	63/24
Maximum permissible speed, m.p.h.	102
Speed at continuous rating, m.p.h.	23
Tractive force, continuous, lb.	83,000
Tractive force, at 25 per cent adhesion, lb.	165,000
Tractive force, maximum at start, lb.	165,400
Braking effort, maximum, lb.	78,600
Speed at maximum braking effort, m.p.h.	26
Journal bearings, diam., in.	6½ x 12
Fuel oil, gal. per cab unit	1,600
Lubricating oil, gal. per cab unit	240
Engine cooling water, gal. per cab unit	490
Sand, total locomotive, cu. ft.	114

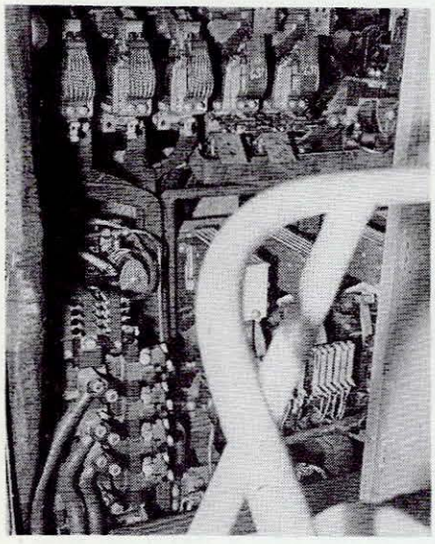
fuel input be insufficient to produce the desired speed, the amplidyne control then reduces the load on the generator. This amplidyne is compact and designed to govern the generator quickly by means of an extremely small electrical field input.

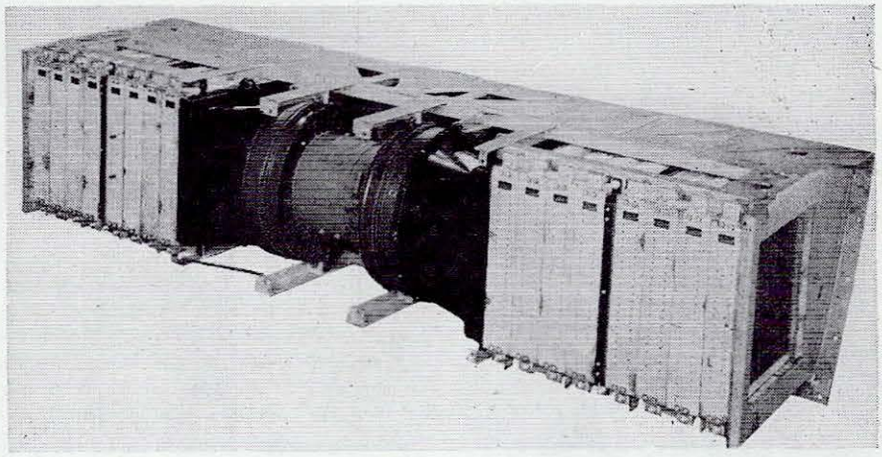
The cooling system for each engine comprises radiators located on each side of cab to take advantage of side winds, with electric-driven radiator fans and shutters for controlling the temperature of the cooling water. Control is fully automatic to maintain the engine at a constant predetermined temperature during all the time it is in operation.

Radiators are ventilated by two 6-ft. diameter fans with two built-up blades, each driven by a vertical motor. The vertical louvres, operated by three hydraulic operators, built by Fairbanks-Morse, are fitted with temperature controls to close the louvres at low temperatures and to open them gradually as the temperature rises above a predetermined level. In conjunction with the automatic louvre control, the radiator fans are also automatically controlled to permit the fans being shut down entirely; or to run at low or high speed.

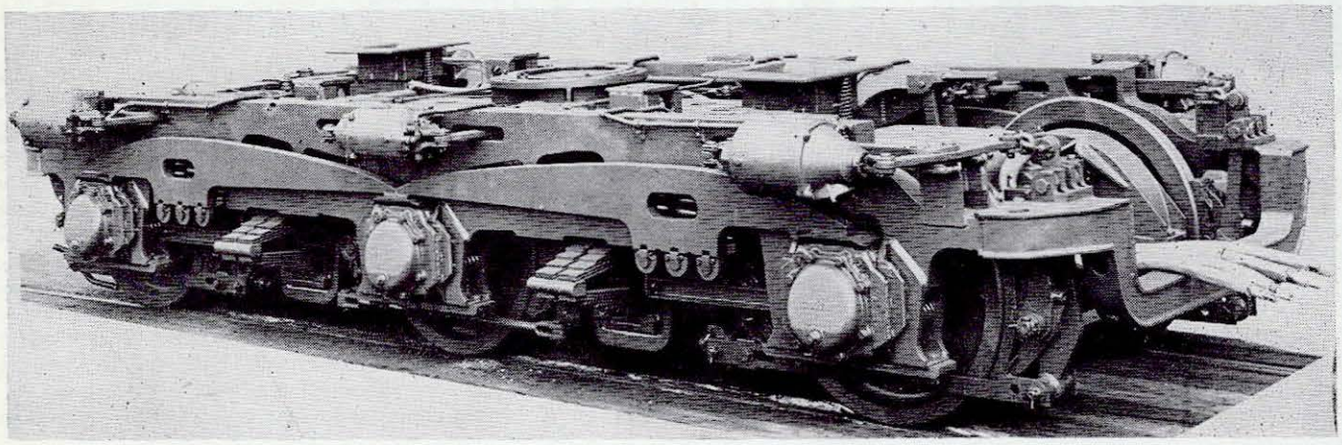
The water circulating systems for jacket water and lubricating oil are separate except for filling and draining. The two-unit oil cooler is of the sheet and tube type, liquid-heat exchanger. Water is circulated through the oil cooler by one of the engine pumps, and then cooled by two separate air-cooled radiators.

The air brakes are of the New York 24-RL high-speed passenger type with electro-pneumatic application and release and with electric speed governors which control the air pressure in the brake cylinders in ratio to requirements based on traveling speed. This brake conforms to that used on streamline trains and affords a maximum speed of brake application and train retardation with minimum risk of sliding the wheels





Above — High-voltage electric-control cabinet in back of cab, A-unit. Right— G-E transportation resistor unit used in connection with dynamic braking. Below—One of the F-M locomotive power trucks built of fabricated steel by G. E.

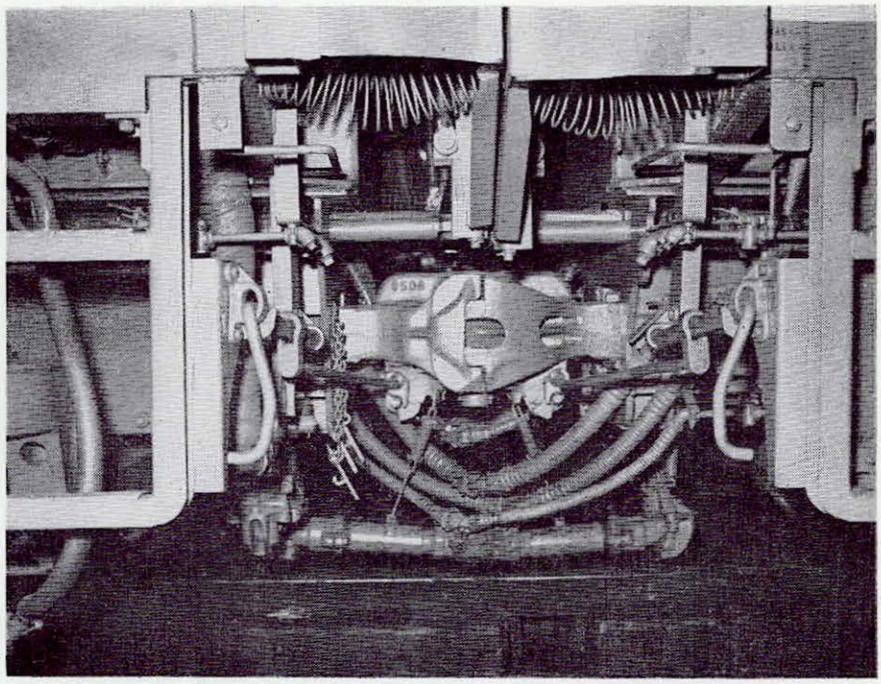


of the train. Electro-dynamic brakes are also provided.

In passenger train handling, the dynamic brakes are used for limiting the speed on descending grades and are supplemented by small applications of air. The electrical energy produced by the traction motors is dissipated in special resistor grids provided in the roof of the locomotive. The two banks of grids are cooled by axial flow fans mounted on each end of a motor placed between them with fans blowing outward from the center.

The independent brake valve is of the self-lapping type and permits gradual increase or decrease of braking pressure on all connected units. The automatic brake valve is a pedestal rotary type valve incorporating all of the features that have been found to be desirable in previous automatic brakes but with provision for obtaining them with greater ease and less skill on the part of the engineman. Provision for sanding is also incorporated in the automatic brake valve through depression of the brake valve handle to depress the sanding bail and operate the sander valve.

A National hand brake, wheel-type, in the nose of the locomotive applies the brakes to two axles on the front truck.



Coupler, air brake and steam conduit connections between the A and B-units

Miscellaneous Features

Each locomotive unit has a Vapor-Clarkson coil-type steam generator for train heating. The steam capacity of each boiler is 2,250 lb. of steam per hour or 6,750 lb. for the entire locomotive. The tanks holding the supply of water for train heating may be removed from the side for inspection or repair.

Control cabinets are made as complete assemblies and are then installed in a compartment located immediately behind the operator's compartment. Bus bars are used in the control cabinet in place of cables which results in more room for accessibility, adds to the neatness of the installation and makes possible greater cleanliness.

The engineman's cabs are set back from the extreme ends and elevated for protection of the enginemen, also for unrestricted vision forward and to the sides. Comfortable swivel-type upholstered seats with back rest and arm rests are installed for the engine crew. Also two hot-water heaters are furnished, one located in front of each operator. These are the fan-blown type and deliver warm air both in front and at the back of each man. Each heater has a separate defroster motor with fan to discharge heated air against the inside of front windows.

All controls are located within easy reach. An instrument panel, located at the engineman's station, is clearly visible by day or night, being illuminated by "black light." The gage dials and instruments are treated with fluorescent paint which causes numerals, markings and pointers to glow when energized with the ultra-violet black light. There is also plenty of room in the cab.

The locomotive is equipped with headlights of high brilliancy and with Mars combination white and red warning lights, the latter projecting a figure-8 oscillating white beam forward for grade crossing protection. If the train comes to a stop, an oscillating red beam projects forward to warn approaching trains.

Automatic train control and cab signal equipment, furnished by the Union Switch & Signal Co., protects the operation in train-control territory of the Union Pacific and other lines over which the locomotive may operate.

The locomotive is streamlined and painted in armour yellow and harbor mist gray to conform to the styling of the streamline train fleet in which service it will operate.

Partial List of Material and Equipment on the Fairbanks-Morse Locomotive

Batteries	Electric Storage Battery Company, New York
Roller bearings	Timken Roller Bearing Company, Canton, Ohio
Bell ringer	Superior Railway Products Corp., Pittsburgh, Pa.
Blowers, traction motor	General Electric Company, Erie, Pa.
Hand brake	National Brake Company, Buffalo, N. Y.
Air brakes	New York Air Brake Company, New York
Air compressors	Westinghouse Air Brake Company, Wilmerding, Pa.
Cooler, lubricating oil	Ross Heater & Mfg. Company, Buffalo, N. Y.
Couplers, tightlock	National Malleable & Steel Castings Co., Cleveland, Ohio
Coupling, flexible	The Falk Corp., Milwaukee, Wis.
Diesel engine	Fairbanks-Morse Company, Beloit, Wis.
Draft gear	National Malleable & Steel Castings Co., Cleveland, Ohio
Electrical equipment; fans	General Electric Company, Erie, Pa.
Filter, fuel oil	Purolator Products, Inc., Newark, N. J.
Filter, lubricating oil	Michiana Products Corp., Michigan City, Ind.
Fuel filter	Protecto Seal Company, Chicago
Gages:	
Pressure	U. S. Gauge Company, Sellersville, Pa.
Float-type fuel	Rochester Mfg. Company, Rochester, N. Y.
Reflex-type fuel	Nathan Manufacturing Company, New York
Headlight	Pyle National Company, Chicago
Horns, air	The Leslie Company, Lyndhurst, N. J.
Heaters, cab	Kysor Heater Company, Cadillac, Mich.
Motor, radiator blower	General Electric Company, Erie, Pa.
Muffler exhaust	Burgess-Manning Company, Chicago
Power-plant regulator	General Electric Company, Erie, Pa.
Radiators	Yates American Machine Company, Beloit, Wis.
Brakes, clasp	Westinghouse Air Brake Company, American Brake Division, Swissvale, Pa.
Sanders	Graham-White Sander Company, Roanoke, Va.
Seats, cab	Coach & Car Equipment Co., Chicago
Shutters	General Electric Company, Erie, Pa.
Radiator shutter control	Fairbanks-Morse Company, Beloit, Wis.
Signal light	Mars Signal Light Company, Chicago
Speedometer	General Electric Company, Erie, Pa.
Steam generator	Vapor Car Heating Company, Inc., Chicago
Trucks, fabricated steel	General Electric Company, Erie, Pa.
Train control and cab signal equipment	Union Switch & Signal Co., Swissvale, Pa.

Retiring president E. J. McGehee, vice-president (Wood Preserving Division, Koppers Co.), is surrounded by three former presidents of the Railway Tie Association. Left to right, standing—W. F. Dunn (Southern), Mr. McGehee, Walter Firmin* (Wyoming Tie & Timber Co.), H. C. Busch (Wood Preserving Division, Koppers Co.), R. M. Clayton* (Southern Wood Preserving Co.); seated—Charles Keen (Southern), Leonard Perez* (Wood Preserving Division, Koppers Co.), K. W. Rhyne (Southern), Roy M. Edmonds, secretary-treasurer (Railway Tie Association), and L. H. Jackson (Southern)

* Past Presidents.

What Lies Ahead for Crosstie Industry

Annual meeting of Railway Tie Association features timely and well-planned program dealing with production, procurement and uncertain conditions facing producers and users

THE twenty-eighth annual meeting of the Railway Tie Association held at the Netherland-Plaza hotel, Cincinnati, Ohio, on July 15-16, was characterized by the largest attendance in the history of this organization; 152 producers and others interested in the production and procurement of crossties for the railways, including 70 railway purchasing and engineering officers, were registered. Both morning and afternoon sessions were held in addition to the annual luncheon on Monday, which was addressed by W. G. Vollmer, president of the Texas & Pacific. (His remarks will be the subject of an article in a subsequent issue.) All sessions were presided over by E. J. McGehee, president of the association and vice-president, Wood Preserving Division, Koppers, Co., Pittsburgh, Pa., assisted by Vice-President Waldo E. Tiller (J. A. Tiller & Son, Little Rock, Ark.), and Roy M. Edmonds, secretary-treasurer.

In the election of officers on Tuesday afternoon, Mr. Tiller was elected president; D. B. Frampton (D. B. Frampton & Co.), first vice-president; T. H. Wagner (Gross & Janes Co.), second vice-president; and T. J. Turley, Jr., (Bond Brothers); John F. Renfro (Taylor-Colquitt Co.); E. W. Jones (T. J. Moss Tie Co.) and G. T. Collicott (Potosi Tie & Lumber Co.), directors. Roy M. Edmonds was re-elected secretary-treasurer. Mr. Tiller, chairman of the membership committee, reported that the association now has 51 corporate and 86 associate members, the largest number in its history.

The highlights of the meeting included papers on What Lies Ahead for the Crosstie Industry?—discussed (1) from the standpoint of the railroad engineer by W. J. Burton, assistant to chief engineer, Missouri Pacific, St. Louis, Mo.; (2) from the standpoint of the railroad economist by Graham E. Getty, statistician, Bureau of Railway Economics, Association of American Railroads, Washington, D. C.; and (3) from the standpoint of the producer, by E. W. Jones. Other papers dealt with the Nine-Foot Tie on the Atlantic Coast Line, by L. S. Jeffords, chief engineer, Atlantic Coast Line, Wilmington, N. C.; the Future of Crosstie Prices, by Peter Stone, editor-in-chief, Construction News; Mechanical Handling of Crossties, by R. H. White, Jr., president, Southern Wood Preserving Co., Atlanta, Ga.; Active Demand for Lumber and Its Effect on Crossties, by C. Miles Burpee, vice-president, Simmons-Boardman Publishing Corporation, New York; and the Effect of War-Time Traffic on Crossties, by C. S. Burt, manager, Forest Products Bureau, Illinois Central, Memphis, Tenn. In addition, sound movies showing the mechanical handling of crossties were presented by R. H. White, Jr., and L. A. DePolis (Ross Carrier Corp.).

Peter Stone, in his discussion of the future of railway tie prices, declared that even before the Office of Price Administration expired the proper price level for oak crossties should have been

around $45 per M f.b.m. If price controls are eliminated, the price will probably rise to $65, or even $75 per M f.b.m., but in either event the $2 basic price crosstie is not far distant, he said.

Closely allied with Mr. Stone's paper in interest was the address by Mr. Burpee, on the effect on crossties of the active demand for lumber. He said: "The fortnight following the sudden demise of O. P. A. has revived hope for all forms of private enterprise—despite freeze orders pending the final disposition of governmental controls, dire predictions of the bureaucrats have not materialized. It will, of course, take some time for adjustment with a considerable period needed for a changeover from material and price controls to the fundamentals of supply and demand.

So Far So Good

"The grave general debacle predicted by governmental authorities did not develop with the utter chaos they so vividly depicted. Price lines in general have been admirably controlled in practically all fields of production. These action have brought to thousands of our citizens a profound renewal of faith in the American way of business.

"The peactime continuation of governmental controls has so disrupted many regular channels of distribution and outlets that we can hardly expect orderly reconversion overnight. But the entire picture has brightened perceptibly during the past two weeks. Reports from Washington headquarters of the National Retail Lumber Dealers Association reflect three impressive reactions, (a) available lumber supply definitely increased; (b) little rise in price; and (c) a telling blow against the 'black market.' From this and other sources, it is apparent that industry is really trying to keep prices down.

"A national survey by the N. R. L. D. A. shows lumber immediately began to return to legitimate channels as soon as the President nullified O.P.A. by his veto. Many retail dealers for the first time since O.P.A. has created were being offered lumber by reputable manufacturers. Contrary to President Truman's and Expediter Wyatt's predictions, prices have been held at O.P.A. levels or have shown slight increase, not even approaching the 20 per cent increase so definitely forecast. Far from destroying the veterans' housing program, the death of O.P.A. would help. O.P.A. price manipulations had drawn 80 per cent of the home building lumber demand to the black market, where it was sold from $20 to $70 per M f.b.m. above ceiling prices.

"Even under present conditions crosstie production is at a relatively high level, and indications are that we are rapidly approaching a buyer's market in that field, but switch ties will be governed largely by supply and demand. One of the most helpful experiences in the crosstie industry has been the carefully planned long-range procurement program that has been installed by some roads. The stabilizing influences of these methods have had a definite bearing on the generally improved crosstie attention."

Committees Submit Reports

A committee on Checking and Splitting of Crossties, of which T. H. Patrick, (C. M. St. P. & P.) was chairman, presented results of a test conducted by W. P. Arnold, technical director, Wood Preserving Division, Koppers Co., in which urea was used in treating green beech and hard maple ties. In the absence of Mr. Patrick, this report was presented by John Wright (Wood Preserving Division, Koppers Co.).

It has been known for some time that a coating of urea on the surface of green lumber tends to retard rapid surface drying so that a more uniform rate of drying is effected throughout the entire cross section. Consequently checking and splitting are reduced. To measure this effect halves of twelve green beech and hard maple crossties were pressure-treated with a 50 per cent urea solution, then stacked with matched untreated halves for air seasoning, and finally treated with creosote. One half of each original tie was retained as a control. The Lowry treating process was used, with a maximum pressure of 150 lb. and short pressure periods ranging from 10 to 30 min. so that salt retentions would be about 1.2 lb. per cubic ft., and depth of urea penetration would be held to a minimum. The 12 half ties were treated in an experimental retort of such size that only two could be impregnated in a single charge, thereby necessitating six charges.

After treatment, the 12 halves were stacked (1 and 5 method) for air seasoning. In an adjacent pile, the 12 matched untreated ties were stacked in the same manner. At the time of stacking (about 24 hours after the ties were cut in half, and two hours after urea treatment) both radial and surface checking were noticeable on the surface and cross section of the beech untreated controls, whereas there was no visible checking on the hard maple controls.

Sixty-nine days after stacking, the ties were weighed and inspected. By this time all beech ties had checks or splits; however, urea had definitely reduced surface and radial checking and splitting. Splitting in maple controls was not severe except in two instances, and of the matching treated halves of these two controls one showed no splitting, while in the second splitting was reduced.

In discussing checking and splitting of crossties, J. B. Akers (chief engineer of the Southern) stated that 350 vapor-dried ties inserted in a test track near Spartanburg, S. C., during October, 1943, were showing promising results; the appearance is good and there are no signs of rail cutting. Mr. Akers declared that checking and splitting which occurs at treating plants did not worry maintenance officers nearly as much as that which occurs after the ties are inserted in the track, and stressed the need for continued research to eliminate this objectionable feature.

A committee headed by H. R. Condon (Wood Preserving Division, Koppers Co.), presented a report discussing the importance of a comprehensive program of timber conservation. Reference was made also to the educational activities of the association and similar efforts of various state and regional groups.

Also presented during the meeting was a report of the committee on Concentration Yard Operations, of which G. B. Campbell, Jr., (J. A. Tiller & Son) was chairman. This report emphasized the importance of having well laid-out yards with adequate drainage facilities of cooperation among workmen and of maintenance of a modern system of record keeping.

A Committee on Specifications of which Mr. Frampton was chairman submitted new specifications for cross and switch ties, which among other changes permit the production of ties having a tolerance of ¼ in. under and 1 in. over the cross sectional dimensions specified and a tolerance of 1 in. under and 2 in. over the length specified, excepting allowances for wane.

The association also gave considerable attention to the problems encountered in crosstie production. In a report on Manufacturing Practices, a committee headed by T. J. Turley, Jr., directed attention to the many ways producers are using mechanized equipment. He pointed out that power driven chain saws are being used extensively in most of the producing areas with varied success. The weight of these saws is approximately 100 lb., but he expressed the view that it should be reduced to about 75 lb. to adapt them more readily to the requirements of the industry.

Longer Ties for Modern Track

In his discussion of the use of 9-ft. crossties on the Atlantic Coast Line, Mr. Jeffords stressed their advantages, especially in conjunction with gage, wheel loads and the transfer of rail pressure to ballast, and declared that 8-ft. ties are too short to meet present requirements.

After careful studies, 9-ft. crossties were adopted in 1941 by the A.C.L. for all main line tracks, and according to Mr. Jeffords they have done much to provide smoother riding and more easily

maintained track. This has been accomplished by the elimination of much center bound track, because the 9-ft. crosstie permits 2-ft. additional tamping length and provides balanced support for the rail. These qualities also result in reduced labor, maintenance and operating economies in favor of the longer ties, as well as giving smoother riding conditions at high speeds.

Mr. Jefford stated, "There are, of course, a few slight cost increases arising from the use of 9-ft. ties; however, as adoption becomes more general these increased costs will diminish." According to the speaker, 60 per cent of the 1¾ million crossties installed annually by the A.C.L. are long ties, and measures are also being taken for transmitting rail pressure by widening the roadbed and flattening the slopes of fills to attain a more stabilized condition for increased speeds and heavier axle loads.

Longer Service Life for Ties

In his address on What Lies Ahead, W. J. Burton declared that present passenger and freight schedules demand better track, and stressed the important part that scientific research is playing in producing better ties. Crossties for modern tracks, said Mr. Burton, must be uniform, as far as possible, to permit proper track line and surface, and additional ways must be discovered to secure longer service life, not only for economic reasons, but because frequent tie renewals disturb track alinement and surface.

Present high prices for labor and materials, including O.P.A. ceilings on crossties, and present low returns on invested capital, point to the economic justification of further tie improvement, he continued.

Even though these improvements may increase the cost of the tie, the annual renewal cost may be reduced through extended service life. The speaker stated that we can treat most kinds of wood for almost indefinite decay resistance, but well-treated specification ties fail through structural damage to the wood itself, by cut spikes, abrasion from loose tie plates, softening of the wood due to moisture which the treatment does not keep out and the shattering of the wood fibres by alternate freezing and thawing of the moisture in the wood during the winter.

Mr. Burton discussed the possibility of impregnating crossties with plastics, which would fill all voids or even the wood cells, changing the wood into a hard, compact and water-resistant material.

He also mentioned the possible development of synthetic wood ties built up of small pieces of waste wood, bonded or glued into a strong, waterproof and durable unit.

Future Crosstie Requirements

*By E. W. JONES**

During the years from 1920 to 1929 the railroads made heavy insertions of crossties, averaging approximately 80,000,000 per year. During this period the percentage of treated tie insertions kept increasing, and such treated ties are now serving out their useful life. Because of the heavy installations during this period there will be heavier renewals in replacing these original treated ties.

The second factor which will affect railroad tie insertions is the fact that during the war years there has been an accelerated wear and tear on the roadbed. It is not known exactly how many additional ties will be required per year because of this accelerated wear, but it is the general opinion that the heavy traffic has had its effect on the life of ties now in service, and it is estimated that approximately 10 per cent more ties will be needed than would normally be required.

Tie insertions for the past ten years have averaged about 45,800,000 per year. Adding these two factors to the ten year average should bring about a requirement of 55,000,000 to 60,000,000 ties per year during the next five or six years, depending on railroad earnings and the ability of the industry to furnish ties.

During the years, when free from regulations, the crosstie industry furnished the railroads the ties they required. Although, since July 1 the O. P. A. has been dormant, crosstie prices have continued at present ceilings. Everyone has more or less been marking time to see what would happen. Prices for ties were established in July, 1945, with a slight revision in March, 1946. This revision, however, affected only a small portion of the tie production. At the time O. P. A. ceilings were established, prices were set at a definite relationship with lumber, tie prices per thousand board feet being somewhat lower than lumber prices then in effect. These prices were established because it became apparent in 1944 that the previous price schedules would not produce the crossties required by the railroads for 1946 insertions. This increase gave the tie industry the additional needed production, with the result that the railroads have been fairly well taken care of for 1946. Since crosstie ceilings were established, there have been several increases in the price of lumber and further increases are probable, in view of the demand for housing lumber. Unless crosstie prices are adjusted to meet competitive conditions, there will not be sufficient ties produced during the remainder of this year to meet railroad requirements during 1947. All tie producers can cite numerous instances where sawmills formerly wholly or partly producing crossties have switched to lumber production. If the O. P. A. continues to function, and unless price adjustments are made so that tie prices are brought closer to the prices of competing forest products, tie production will be much lower than it is at present. It is hoped that future price adjustments will not take as long as some for which the industry waited in the past. If our industry is free to operate competitively, tie prices will be adjusted where needed and as needed, to bring out the maximum production at the lowest possible cost. The railroads will determine the number of crossties to be inserted each year, and in the final analysis they will also be the ones to determine the prices which will be paid.

* T. J. Moss Tie Co.

Cash Reserves Dwindle

By GRAHAM E. GETTY†

The financial structure of the railroad industry has been materially strengthened during the war period and the outstanding funded debt of the Class I carriers has been reduced by more than one billion dollars, while there was a considerable amount of refunding of outstanding issues at substantially lower interest rates. In addition, the carriers had on hand, at the end of the war, substantial cash reserves with which to replace equipment and other facilities worn out during the period of heavy war requirements. The railroads have extensive programs for the rehabilitation and modernization of their properties in order to meet the needs of industry in the post-war period.

The current unfavorable relationship between revenues and expenses threatens curtailment of this program. In fact, evidence of such curtailment is already in hand. Money that was set aside during the war period for work that could not be done at that time may have to be diverted to meet operating payrolls and other current costs. Such a situation is not calculated to produce the kind of transportation in the post-war period that industry will require.

Railroad freight rates are now only 6½ per cent above those in effect in 1939, while passenger fares are only 10 per cent greater. In contrast, the index of wholesale prices of all commodities, as reported by the Bureau of Labor Statistics, shows an increase of 44 per cent during the same period. Farm products alone show an increase in wholesale

† Statistician, Bureau of Railway Economics, A.A.R.

prices of 110 per cent; foods, an increase of 58 per cent; and manufactured products 32 per cent. Obviously, transportation rates have lagged far behind the parade.

The railroad industry needs many things, including new and modernized equipment, rail, crossties, and thousands of other items. All of these needs represent a part of the great backlog of demand for goods that existed in this country at the end of the war. The cash reserves held by the railroads at that time also represented a part of the buying power available to satisfy that demand when goods became available in ample supply. The question of the moment is: Will those cash reserves be dissipated in meeting increased wage and material costs before they can be spent for deferred maintenance and capital improvements so essential to the future of the industry?

Between September, 1939, and December, 1945, wage rates paid by the railroads increased 26 per cent. Unit prices paid by the railroads for fuel, materials and supplies increased 33 per cent during the same period. The railroads were able to absorb these increases in operating costs largely because of the exceptionally heavy volume of traffic handled.

Freight rates were the same at the end of the period as at the beginning, although temporary increases averaging less than 5 per cent were in effect from March, 1942, to May, 1943. Passenger fares were increased by 10 per cent in February, 1942, and have been maintained at that level.

Railroad freight traffic began to fall off sharply following V-J Day and passenger traffic showed similar declines after the peak of the return movement of troops was passed in January, 1946. Unit operating costs, on the other hand, continued to rise.

A wage increase of 16 cents per hour was granted in April, retroactive to January 1, 1946. An additional increase of 2½ cents per hour was granted effective May 22, 1946. These increases brought the level of straight time rates from 74 cents per hour in 1939 to $1.12 per hour in 1946, an increase of slightly more than 50 per cent. Unit prices paid by the railroads for fuel, material and supplies continued to rise and are now also at a level 50 per cent above 1939.

Meanwhile, the declining volume of traffic resulted in a reduction of 23½ per cent in railroad operating revenues during the first five months of 1946. The net result of increasing operating costs and declining operating revenues was that the Class I railroads as a whole failed to earn their interest and other fixed charges in the first five months of 1946 by about $40,000,000.

War Traffic vs. Ties

*By C. S. BURT**

The unprecedented volume of traffic hauled during recent years can be expected to take its toll of crossties by reason of the increased wear to which they were subjected. The construction of defense plants and training camps incidental to the war effort brought increased traffic to many secondary main and branch lines that were not in condition to handle this type of traffic.

In the last few years, axle loads have also increased on many railroads from about 55,000 lb. to 70,000 lb. We are, therefore, confronted with the very definite problem of how to meet the increased loading without a wholesale replacement of smaller ties, applied in track 10 to 15 years ago, that heretofore were quite satisfactory for the lighter loads.

Volume of traffic was by no means the only problem of the railroads in war years. There were vast shifts in kinds of traffic, and even in direction of movement. Since freight rates changed little, if at all, revenue comparisons give a fair idea of these variations. In 1940, for example, the Illinois Central revenue from handling of petroleum and petroleum products plugged along at practically the peacetime level of $7,250,000. As a result of German submarine raids, the I. C.'s revenue from this source skyrocketed to $37,700,000 in 1943 — five times greater than before. This particular example is cited because we are told by maintenance officers that such traffic has a greater effect on track maintenance than any other movement. These comparisons also reflect the extensive capacity for service a railroad must possess. They show how necessary it is that a railroad be maintained so it can respond to demands for peak loads, even though during long periods it may furnish only a stand-by service.

Crossties ordinarily fail from mechanical action, decay or natural defects in the wood. Of the total number of creosoted pine, gum and oak ties removed from I. C. test sections during 1927 to 1943, inclusive, 58.5 per cent failed from mechanical destruction with no important sign of decay; 28.2 per cent of these failed because of being plate-cut; 24.3 per cent were crushed and 6 per cent were spike killed. Decay, a major cause of tie failures on the I. C. at one time, was the cause of 16.7 per cent of renewals. Obviously, as the service life of ties increases, the percentage of failures caused by mechanical destruction will also increase. If it were possible for all other items to remain constant, it is reasonable to assume the average service life of crossties would be in direct proportion to the kind and volume of traffic and the speed of trains.

During the war years, due to a shortage of ties, railroads have been competing for the available supply and more or less insisting that purchasing officers supply their requirements. Under such conditions, there is always the tendency, by both producer and user, to be less insistent in observing tie specifications. In many instances, to get ties at all, the railroads have been forced to use inferior woods — species that are not accepted during normal times. Although the ties accepted may have been sound and fully up to specification requirements for dimension, it is a foregone conclusion that even though they may be given the best of care—including adzing and boring before treatment—some of these ties will have a shorter service life than if they had been made from better woods. Furthermore, because of this acute shortage, vast quantities of ties have been placed in track immediately following preservative treatment. Such ties are more susceptible to damage from mechanical action than if they were allowed to season for a reasonable length of time before insertion.

Recently there has been a marked improvement in the quality of ties themselves, and in the protection afforded them against damage from traffic. In the matter of preservative treatment, there has been constant improvement, though just now, because of the acute shortage of creosote and coal-tar, it has become necessary to modify standards to the end that the available supply of these preservatives may be extended to provide protection for the greatest possible volume of wood. Substitute preservatives are also being used to the best advantage during this emergency.

In the coming days of intense competition with other forms of transportation, railroad traffic will move faster and faster, and with heavier loads. With higher speeds we must have heavier track. Ties must be equal to these conditions. Progressive improvement in ties and the track structure generally, and methods of handling maintenance work, have been found necessary and will be more so in the future to offset the additional burden of heavier wheel loads and higher speeds. It is no exaggeration to recognize crossties as the real foundation of track structure.

* Manager, Forest Products Bureau, Illinois Central.

THE PRODIGAL TOWEL.—One of the 300,000 lavatory towels, "borrowed" from the Great Western (England) in 1939, has just been returned to the company perfectly laundered. The wrapper bears the inscription—"The need was great—1939." The G. W. R. announces it will be grateful if other "borrowers" of towels, window straps, blinds, electric light bulbs, seat cushions, rugs, and cups will follow suit.

Eastbound train at east end of siding at Smiths

Automatic Block with Spring Switches

Central of Georgia has increased safety and saved train time by installing signaling on 120-mile single-track district including spring switches at 22 sidings

BY INCLUDING spring switches at all of the 22 principal sidings, the new Central of Georgia installation of automatic block signaling on 120 miles of single track between Columbus, Ga., and Sterrett, Ala., not only increases safety but effects a maximum saving in train time for this form of signaling. This railroad has been a pioneer in the design and application of signaling in which train movements are authorized by signal indication rather than by time-tables and train orders, such a system having been placed in service in March, 1924, on 4.5 miles of single track between Macon, Ga., and Paynes, and on 23.6 miles of single track and 5.1 miles of double track between Macon and Fort Valley in April, 1927. This was before the term centralized traffic control was first applied to such signaling, and since that time many extensive installations have been made on numerous railroads now totaling more than 6,000 miles of track.

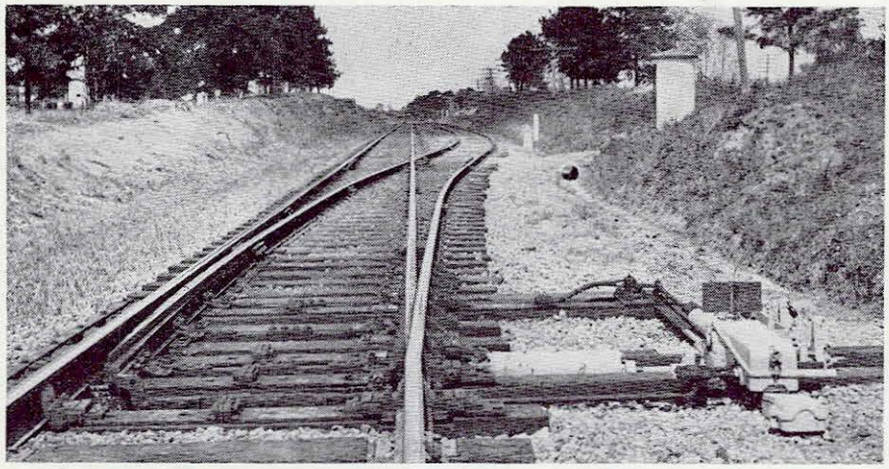
The first proposal for the Columbus-Birmingham territory in 1943 was to include provisions for the dispatcher to control signals at the sidings for authorizing train movements by signal indication, similar to the Macon-Fort Valley section, and to more modern projects on other railroads. This proposal, however, was not approved by the War Production Board, though it did authorize straight automatic block signaling.

Accordingly the Central of Georgia decided to plan the automatic block so that it would not only provide safety but also increase track capacity as much as possible. No reductions were made in the number of open offices or hours during which offices were open. Therefore, the maximum that could be expected from timetable and train order operation was retained. Furthermore, spring switch mechanisms were installed at 41 passing track switches to save time for trains when departing from these sidings.

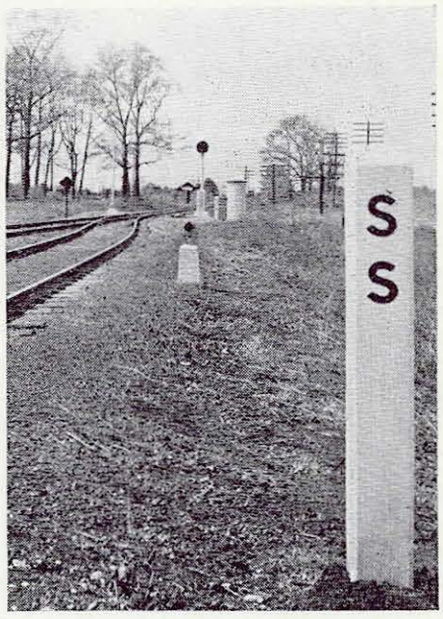
Just west of Columbus, the railroad crosses the Chattahoochee river, and the grade ascends westward at varying rates up to 0.85 per cent for about 6 miles. The ruling grade eastward, about 5 miles long, ranging from 1.00 per cent to 1.28 per cent, extends from Sylacauga to Trammells, and includes 15 curves, of which two are 4 deg., one is 5 deg., and five are 6 deg. Except for these two grades, the railroad is on rolling grades with comparatively easy curvature for the remainder of the mileage between Columbus and Sterrett, 113 miles. Between Sterrett and Birmingham, 34 miles, the railroad passes through rough mountainous country, including long heavy grades and two tunnels. Automatic block was previously in service on this end, so that the entire engine district of 154 miles between Columbus and Birmingham is now equipped.

This engine district is part of two through routes: (1) between Birmingham and Savannah, Ga., via Macon; and (2) between Birmingham and Albany,

Ga., via Americus. In connection with other railroads beyond its lines, these parts of the Central of Georgia are links in the operation of through passenger and freight service between Chicago, St. Louis, Kansas City, Memphis and Birmingham, on the one hand, and Savannah, Jacksonville, St. Petersburg, Miami and other Florida points on the other. The "City of Miami," a lightweight high-speed passenger train with a Diesel-electric locomotive, is operated in each direction every third day. The "Seminole," a passenger train with conventional cars and a steam locomotive, is operated each way daily. The through business on this train recently has required about 17 cars, and, therefore, a second section, to handle local traffic, is operated each way daily. Another local passenger train each way brings the total to six daily, in addition to the "City of Miami" every third day.



Left — Spring switch with facing-point lock. Below—Red lock lamp on foundation and SS post on a turnout



Traffic Over the Line

Four scheduled manifest freight trains are operated in each direction daily, and a local freight is operated each way daily except Sunday. A local train, to and from the Roanoke branch, operates each way daily over the main line between Columbus and Opelika. Counting extra trains, about 14 freight trains and 6 to 8 passenger trains are operated daily on the section between Columbus and Sterrett. Between Sterrett and Birmingham there are numerous extra moves to handle coal from the mines, and to move extra tonnage over certain grades. During the first three months of 1946 the movement of ordinary traffic was greater than in the same period in 1945. For example, there was more fruit, lumber, merchandise, meat, live stock and coal. On a typical day recently, eight westbound freight trains included 186 loads and 272 empties, and eight eastbound trains included 647 loads and 41 empties.

Prior to the installation of this signaling, train movements were authorized by timetable and train orders, with a minimum spacing of 10 minutes between the departure of following trains from any office, and likewise freight trains had to clear the main track at least 10 minutes ahead of the scheduled arrival of superior trains. For the high-speed "City of Miami" passenger train, the clearance time and spacing was 20 minutes. Now, with the automatic block signaling, the train movements are still authorized by timetable and train orders but the signaling provides for train movements at closer spacings with safety.

Previously, all siding switches between Columbus and Sterrett were operated by hand-throw stands, whereas, as a part of the new signaling project, spring switches were installed at all of the principal sidings used for passing trains. This includes spring switches at both ends of 19 sidings. Also at the lap siding layout at Kellyton, spring switches were installed at the outlying ends of the two sidings. When leaving a siding which is equipped with a spring switch, a train pulls out and departs without stopping or waiting for a trainman to operate the switch. According to tests made on this territory, a freight train with about 40 cars totaling 2,000 tons saves about 7 to 10 minutes in departing from a siding equipped with a spring switch, as compared with a hand-throw switch. A 4,000-ton train including 55 to 80 cars would save 10 to 12 minutes or more. The variation in time depends on the local conditions, such as grades and curvature.

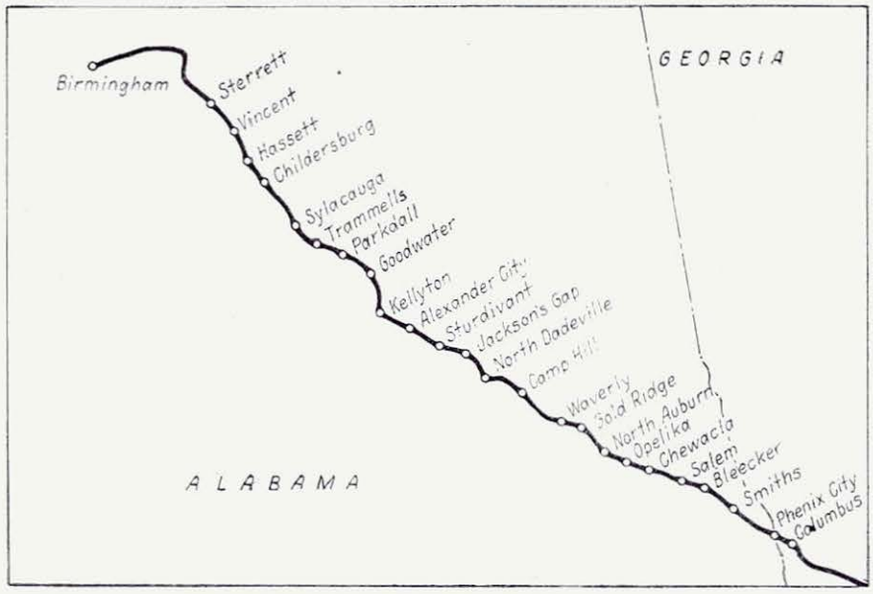
Keeps Trains Rolling

In addition to checking track occupancy for trains ahead, the signaling detects other conditions. For example, during the first six months in service the signals detected six broken rails and two main switches that were open part way. As expressed by one engineman, "The signals are just like somebody out ahead telling me to come on, 'the way is safe'." With this confidence in the protection provided by the signals, the enginemen can keep their trains rolling at speeds which are nearer to the maximums allowed. For example, prior to the installation of signaling, the heavier passenger trains, such as the "Seminole," had difficulty in making the scheduled running time, often losing 20 to 30 minutes between Columbus and Birmingham. Now these trains can hold to the schedule easily and, if necessary, make up 30 to 45 minutes.

Similarly the through freight trains, if given a clear track, can make fast time. In numerous instances when the dispatcher can get the first section of eastbound freight train No. 38 out of Birmingham 30 minutes ahead of passenger train No. 2, he keeps the freight rolling ahead of the passenger all the way to Columbus. Without the signaling, the freight train would have to take siding to let the passenger train by, so that the freight would lose 30 to 45 minutes.

The through freight trains are received from and delivered to connecting railroads for operation in through schedules, such as from St. Louis to Jacksonville with third morning arrival. Therefore, the C. of G. must operate these trains over the Columbus-Birmingham

district in the allotted time, and must make up time if received late. In this respect, the new automatic block signaling and spring switches have been a great help. For example, the first section of No. 29, the fast westbound freight, must be in Birmingham before 5 p. m. On occasions this train leaves Columbus from 45 minutes to an hour behind schedule. Since the new signaling was completed in July, 1945, this train has made up all the time needed so that it has not missed connections at Birmingham a single time. Similar good reports apply to other through trains. Prior to the installation of signaling and spring switches, the freight trains handling regular tonnage would ordinarily require 8 hrs. or more for the run either way between Columbus and Birmingham, and time of 7 hrs. was exceptional. Now the 2,000-ton trains make the run in about 5 hrs. 30 min. and the 4,000-ton trains in about 6 hrs. 5 min.



Map of subdivision between Birmingham, Ala., and Columbus, Ga.

Replacing of Switches

At each location where a spring switch was to be installed, the old switch stand was replaced by a Union Switch & Signal Company Type S-21 switch movement which in reality is a hand-throw switch-and-lock mechanism including a lock rod and plunger which locks the switch just the same as at a switch in an interlocking plant. The oil-buffer spring mechanisms are the Mechanical Switchman type made by the Pettibone - Mulliken Corporation. These devices take the place of a regular connecting rod for the switch. As applied to a spring switch the S-21 switch stand also includes an arrangement and pipe connection so that when a train starts to pull out of the siding to trail through the switch, the lock plunger is automatically withdrawn from the lock rod to permit the switch to open to allow the train to trail on through. If changes in temperature, running rail or other local conditions have changed the adjustments so that the switch does not return to its normal position with the plunger through the lock rod, then the circuits hold the main-line high signals to display the red aspect to approaching trains, and, after having stopped, the enginemen must inspect the switch before proceeding over it in the facing-point direction.

If temperature variations have changed adjustments so that the plunger goes too far through the lock rod, it might not be pulled out far enough when a train starts to trail out through the switch from the siding. Experience proves that this overthrow occurs very rarely, but nevertheless the device is designed with contacts which detect this overthrow condition and cause a red lamp to be lighted on a small concrete foundation located opposite the fouling point on the siding.

When such a warning lamp is lighted, it indicates to the engineman of a train on the siding that he must not trail his train out through the spring switch, but rather the switch must be thrown by hand by a trainman. Also, as a reminder to enginemen of trains ready to depart from a siding equipped with a spring switch, there is a special marker post, with letters "SS", which is located along the siding near the clearance point, as shown in one of the illustrations.

For example, with a train on a siding ready to go, the engineman looks to see that he has a green aspect in the station-departure head-block automatic signal, then he is reminded by the SS sign that he has a spring switch which he can trail through without stopping, providing the little red lamp is not lighted on the small foundation beyond the SS sign. This combination of information has proved to be effective in giving the enginemen confidence to pull out promptly and thereby save time.

This installation of automatic signaling and spring switches was planned and installed by the forces of the Central of Georgia under the jurisdiction of E. B. DeMeritt, signal engineer, and the field work was under the direct supervision of D. McCaleb, general signal foreman. The major items of signaling equipment, including the Type S-21 switch stands and facing-point locks, were furnished by the Union Switch & Signal Company.

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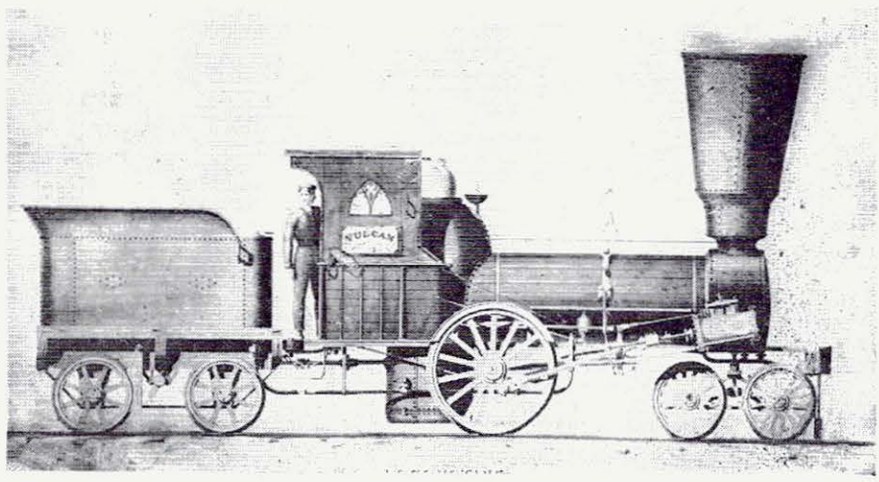


Photo courtesy of W. A. Lucas

The "Vulcan," built by William Norris for the Western of Massachusetts (the Boston & Albany today) in use in 1843

Tie Renewals Down 8.4 Per Cent

Data reported by A. R. E. A. show decreased replacements compared with previous year because of drop in production and continued severe shortage of labor during the period

REFLECTING the difficulties that continued to surround the procurement of crossties, and the extreme shortage of labor with which the railways were contending during most of the year, only 43 Class I roads in the United States and one in Canada inserted more ties per mile of maintained track in 1945 than they did in 1944, while 83 roads in the two countries inserted fewer ties, three inserted the same number during each of the two years and one road inserted no ties during 1945. Of these 133 roads, 130 are in the United States and three are in Canada. One Canadian road that reported this year did not do so last year, while one that reported last year did not do so this year.

As a net result of these operations, the Class I roads in the United States inserted 43,731,792 new wooden crossties, 180,091 secondhand ties and 330 ties other than wood, making a grand total of 43,912,213 ties of all classes inserted in 1945. This represents a decrease of 4,142,589 ties, or 8.4 per cent. The three Canadian roads reporting inserted 7,544,198 new wooden crossties in 1945, compared with 7,638,324 for the three roads reporting for 1944, a decrease of 94,126 crossties.

These and other important comparisons can be drawn from the tabulation of statistics relating to tie renewals compiled for the Committee on Ties of the American Railway Engineering Association by the Bureau of Railway Economics from reports made to the Interstate Commerce Commission by the roads of the United States and directly to the bureau by the Canadian roads. These statistics, which were reported to the association by the Tie committee, are reproduced here in condensed form.

Renewals Per Mile of Track

With the few exceptions to be noted, the number of ties renewed per mile of track maintained by individual roads did not differ widely from the number replaced in 1944. This is attested by the fact that the average for all of the roads in the United States was only 12 less in 1945 than in 1944, and seven less than the five-year average ending in 1945.

Among the noteworthy changes were the Chicago & Illinois Midland, from 150 to 329; the Alabama Great Southern, from 132 to 214; the Atlanta & West Point, from 201 to 278; the Atlantic Coast Line, from 178 to 277; the Charleston & Western Carolina, from 182 to 270; the Delaware & Hudson, from 152 to 110; the Baltimore & Ohio, from 191 to 144; the Elgin, Joliet & Eastern, from 146 to 90; the Long Island, from 210 to 123; the Georgia & Florida, from 317 to 195; the Green Bay & Western, from 392 to 225; the Spokane, Portland & Seattle, from 492 to 233; the Missouri-Kansas-Texas, from 325 to 157; and the Texas & Pacific, from 232 to 192. In each of the foregoing comparisons, the figure for 1944 is given first. Three roads replaced the same number of ties in 1945 as in 1944, namely, the Detroit, Toledo & Ironton, 47; the Wheeling & Lake Erie, 94; and the Denver & Rio Grande Western, 40.

Of similar interest are the comparisons by regions, these being for the New England region, from 84 to 72; the Great Lakes region, from 131 to 107; the Central Eastern region, from 127 to 115; the Pocahontas region, from 90 to 89; the Southern region, from 187 to 186; the Northwestern region, from 144 to 136; the Central Western region, from 139 to 136; and the Southwestern region, from 169 to 124. For the United States as a whole the comparison is from 144 to 132.

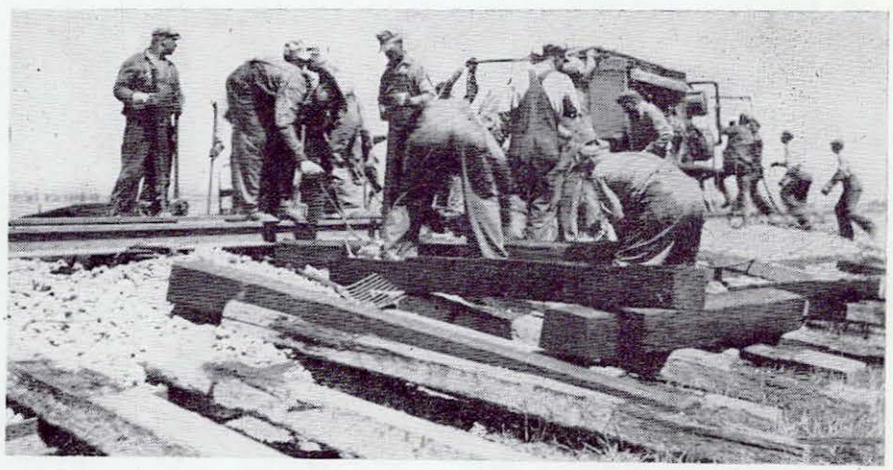
The five-year average by regions was: New England, 85; Great Lakes, 120; Central Eastern, 121; Pocahontas, 87; Southern, 184; Northwestern, 143; Central Western, 134; and the Southwestern, 162. For the United States as a whole the five-year average was 139.

Treated Ties Hold Their Own

Further analysis of these statistics discloses that in 1945 treated ties were used exclusively on 66 roads, compared with 71 roads in 1944, and that only two roads did not use any treated ties in 1945. On 40 other roads more than 80 per cent of the ties inserted for replacement were given preservative treatment; on eight roads the percentage of treated ties ranged from 60 to 80 per cent; on six roads the range was from 40 to 60 per cent; while on four roads 20 to 40 per cent of treated ties were applied; and on only five roads was the percentage of treated ties less than 20.

Relatively, the number of treated ties increased again in 1945, since they represented 94 per cent of all ties inserted for replacement during the year, compared with 93.4 per cent in 1944, with 91 per cent in 1943, with 89.6 per cent in 1942, and with 87.5 per cent in 1941. This represents an increase of 0.6 per cent in the ratio of treated to untreated ties for the year, and it should not be overlooked that this relative increase occurred despite a decrease in the number of treated ties inserted.

Numerically, there was a decrease of



Treated ties were used exclusively in 1945 on 66 of the Class I railways of the country

79,888 in the number of treated ties, from 41,363,077 ties inserted in 1944 to 41,283,189 inserted in 1945 by the railways of the United States, or 0.2 per cent. There was also an accompanying decrease of 1,347,491, or 35.5 per cent, in the number of untreated ties applied by these same roads, this drop being from 3,796,100 in 1944 to 2,448,-603 in 1945. There was also a considerable decrease in the combined number of substitute and secondhand ties inserted in 1945. Compared with the previous year, the reduction was from 211,846 in 1944 to 180,421 in 1945, a difference of 31,425.

The tabulation also contains a column showing the five-year average tie renewals for each road, which reveals that the roads having the lowest five-year average per mile of maintained track for the period ending with 1945 were the Denver & Rio Grande Western, with an average of 37 ties per year; the Central Vermont, with 39; the Rutland, with 44; the Kansas, Oklahoma & Gulf, with 45; the Lehigh & New England and the Detroit, Toledo & Ironton, with 54 each; the Midland Valley, with 56; the Cincinnati, New Orleans & Texas Pacific, with 57; the Norfolk & Western, with 58; the Bessemer & Lake Erie, with 66; the Chicago, Indianapolis & Louisville, with 69; the New York, New Haven & Hartford, with 72; the Lehigh Valley, with 76; the Delaware, Lackawanna & Western and the Pennsylvania-Reading Seashore Lines, with 80 each; and the Boston & Maine and the Erie, with 82 each. The five-year average for the Canadian National was 179; for the Canadian Pacific, 143; and for the Ontario Northland, 187.

Two measures of tie-renewal policies are shown in the last two columns of the accompanying table. One of these gives the cost of tie renewals per mile of maintained tracks; and the final column gives the cost of wooden crossties per thousand equated gross-ton miles. In this connection, considerable caution should be observed in comparing the cost of ties on one railway with that on another, because of the wide variations in conditions that exist at present in different sections of the country.

The data in this table cover a total of 331,200.93 miles of maintained tracks compared with 331,261.85 miles in 1944, a decrease of 60.92 miles.

Statistics of Crosstie Renewals on Leading Railroads in the United States and Canada For the Calendar Year Ending December 31, 1945

Road	Miles of maintained track occupied by crossties	Total number of new wooden crossties laid in replacement in 1945	Number of wooden crosstie renewals per mile of maintained track		Per Cent of wooden crosstie renewals to all ties in tracks		New wooden ties untreated (U)		New wooden ties treated (T)		Estimated total crossties in all maintained tracks	Cost of new wooden crosstie renewals per mile of maintained track	Cost of new wooden crosstie renewals per thousand equated gross ton-miles (cents)
			1945	5 year average	1945	5 year average	Per cent applied	Average cost††	Per cent applied	Average cost††			
New England Region:													
Bang. & Aroos.	823.23	90,396	110	127	3.8	4.4	53.1	$1.47	46.9	$2.83	2,366,413	$231	9.72
B. & M.	2,904.76	122,279	42	82	1.4	2.7	0.3	1.00	99.7	2.41	8,569,000	101	1.54
C. N. R. (Lines in N. E.)	240.59	30,247	126	126	4.0	4.1	2.3	0.90	97.7	1.69	761,050	211	6.56
C. P. R. (Lines in Me.)	215.49	17,654	82	64	2.6	2.1	17.9	1.39	82.1	1.99	670,959	154	1.26
C. P. R. (Lines in Vt.	125.37	10,787	86	92	2.9	3.1	0.2	0.96	99.8	1.95	377,449	168	3.15
Central Vt.	494.96	10,316	21	39	0.7	1.3	...	...	89.3*	1.99	1,463,000	42	0.75
Me. Cent.	1,213.91	150,376	124	133	4.1	4.4	28.6	1.31	71.4	2.85	3,681,500	299	7.93
N. Y. Connecting	25.90	3,416	132	191	4.2	6.1	...	...	100.0	3.03	81,641	400	2.56
N. Y. N. H. & H.	3,821.98	293,775	77	72	2.5	2.3	...	...	100.0	2.48	11,983,348	190	2.37
Rutland	486.85	18,864	39	44	1.2	1.4	...	...	92.8*	2.13	1,513,100	83	2.44
Total	10,353.04	748,110	72	85	2.4	2.8	12.7	1.39	87.0*	2.48	31,467,460	169	2.69
Great Lakes Region:													
Ann Arbor	402.38	38,841	97	94	3.2	3.1	...	...	100.0	2.21	1,220,432	213	5.09
Camb. & Ind.	56.53	10,003	177	255	6.2	9.2	...	...	100.0	2.35	162,331	416	15.56
D. & H.	1,390.36	152,255	110	139	3.5	4.5	0.1	1.28	99.8*	2.69	4,301,669	294	2.65
D. L. & W.	2,224.26	158,091	71	80	2.5	2.7	...	...	93.8*	2.40	6,450,814	171	2.01
Det. & Mack.	277.69	25,914	93	101	3.1	3.4	88.6	0.99	11.4	1.80	828,397	101	11.84
D. & T. Shore Line	148.60	10,637	72	91	2.4	3.0	...	...	100.0	2.38	448,382	170	3.82
Erie	4,727.87	334,455	71	82	2.4	2.8	...	...	100.0	2.50	13,964,468	177	1.77
G. T. W.	1,895.65	270,063	142	155	4.5	4.9	...	...	100.0	2.30	6,001,270	327	5.97
L. & H. R.	112.67	11,080	98	97	3.7	3.6	...	...	89.7*	2.93	302,900	288	3.09
L. & N. E.	257.80	15,159	59	54	1.9	1.8	...	...	100.0	2.71	780,558	159	3.84
L. V.	2,641.48	194,634	74	76	2.5	2.6	...	...	100.0	2.57	7,849,529	189	2.36
Monongahela	238.04	22,817	96	143	3.3	4.9	...	...	100.0	2.30	695,195	220	4.47
Montour	72.39	7,253	100	85	3.5	2.9	0.6	2.13	99.4	1.85	208,494	213	4.32
N. Y. C.	21,144.58	2,489,763	118	131	3.9	4.3	0.5	1.90	99.3*	2.45	63,632,502	288	3.07
N. Y. C. & St. L.	2,535.39	394,617	156	149	4.9	4.7	...	...	100.0	2.31	7,986,488	359	3.21
N. Y. O. & W.	787.44	1,527	2	6	0.1	0.3	...	...	7.5*	2.14	2,261,766	4	0.12
N. Y. S. & W.	214.69	6,795	32	51	1.1	1.7	...	...	100.0	1.95	625,414	62	3.49
P. M.	2,581.55	334,701	130	158	4.3	5.2	...	...	100.0	2.16	7,697,394	281	4.66
P. & L. E.	860.40	80,444	93	106	3.1	3.5	...	...	100.0	2.49	2,576,006	233	3.92
P. & S.	115.19	18,946	164	181	5.8	6.4	...†	1.57	93.4*	3.09	326,547	507	18.07
P. & W. Va.	182.28	19,169	105	189	3.5	6.2	...	...	100.0	3.09	554,430	325	4.21
P. S. & N.	219.21	7,644	35	102	1.2	3.5	50.0	1.23	9.0*	2.20	643,852	48	4.22
Wabash	3,158.87	350,398	111	129	3.6	4.2	...	...	100.0	2.15	9,849,498	238	2.65
Total	46,245.32	4,955,206	107	120	3.6	3.9	1.0	1.43	98.2*	2.41	139,368,336	257	2.97
Central Eastern Region:													
A. C. & Y.	214.49	47,319	221	231	7.7	8.0	87.5	1.94	12.5	1.94	617,731	428	10.28
B. & O.	10,347.61	1,493,177	144	168	5.1	5.9	...	...	100.0	2.16	29,509,665	312	2.95
B. & L. E.	487.50	14,422	30	66	1.0	2.2	...	...	100.0	3.11	1,516,115	92	0.99
C. & N. J.	1,408.99	117,896	84	93	3.0	3.3	...	...	100.0	2.44	3,960,857	204	2.64
C. & E. I.	1,327.00	153,467	116	118	3.7	3.8	...	...	100.0	2.21	4,114,894	256	3.54
C. & I. M.	169.71	55,826	329	169	11.1	5.6	...	...	100.0	3.25	502,961	1070	12.34
C. I. & L.	730.83	37,167	51	69	1.6	2.2	0.5	1.34	99.5	1.85	2,268,841	94	2.36
D. T. & I.	601.77	28,332	47	54	1.6	1.9	1.3	0.43	98.7*	1.93	1,733,126	90	2.77
E. J. & E.	856.46	77,039	90	134	2.9	4.3	...	...	93.8*	2.13	2,643,252	192	4.13
Ill. Term.	634.83	56,633	89	89	3.0	3.0	6.3	1.38	92.8*	1.81	1,904,490	159	7.33
Long Island	797.43	98,006	123	128	4.3	4.5	...	...	100.0	2.94	2,274,921	361	6.07
Mo.-Ill.	214.14	37,492	175	213	5.6	6.8	...	...	100.0	1.77	671,216	310	14.09
Penna.	21,372.35	2,339,633	109	105	3.8	3.7	...†	1.80	100.0	2.30	60,997,300	252	2.07
P.-R. Seashore Lines	635.34	49,804	78	80	2.9	2.9	...	...	100.0	2.83	1,722,868	222	7.40
Reading	2,892.89	353,810	122	107	4.4	3.8	...	...	100.0	2.39	7,999,116	292	3.55
S. I. R. T.	92.62	6,051	65	62	2.7	2.3	...	...	100.0	2.78	222,288	182	6.64
W. M.	1,145.31	85,821	75	109	2.6	3.8	1.6	1.40	98.4	2.30	3,319,002	171	2.11
W. & L. E.	833.89	78,699	94	149	3.1	5.0	...	...	100.0	2.37	2,510,145	223	3.38
Total	44,763.16	5,130,594	115	121	4.0	4.2	0.9	1.87	98.9*	2.28	128,488,788	261	2.58
Pocahontas Region:													
C. & O.	5,068.39	492,270	97	93	3.2	3.0	...†	1.97	100.0	2.19	15,581,697	213	1.51
N. & W.	4,294.14	290,471	68	58	2.2	1.9	...	...	97.4*	2.13	13,311,834	144	1.22
R. F. & P.	398.72	85,693	215	297	7.4	10.4	...†	1.34	100.0	2.18	1,153,500	469	2.29
Va.	906.17	80,451	89	101	2.9	3.3	...	...	99.9*	1.78	2,786,819	158	1.49
Total	10,667.42	948,885	89	87	2.9	2.8	...†	1.77	99.9*	2.14	32,833,850	190	1.45

Statistics of Crosstie Renewals on Leading Railroads in the United States and Canada For the Calendar Year Ending December 31, 1945 (Continued)

Road	Miles of maintained track occupied by crossties	Total number of new wooden crossties laid in replacement in 1945	Number of wooden crosstie renewals per mile of maintained track		Per Cent of wooden crosstie renewals to all ties in tracks		New wooden ties untreated (U)		New wooden ties treated (T)		Estimated total crossties in all maintained tracks	Cost of new wooden crosstie renewals per mile of maintained track	Cost of new wooden crosstie renewals per thousand equated gross ton-miles (cents)
			1945	5 year average	1945	5 year average	Per cent applied	Average cost††	Per cent applied	Average cost††			
Southern Region:													
A. G. S.	552.59	118,002	214	122	7.1	4.0	2.1	$ 0.76	97.9	$ 2.50	1,665,599	$525	4.70
A. & W. P.	140.70	39,059	278	236	9.0	7.6	32.0	1.84	68.0	2.37	434,510	611	7.20
A. B. & C.	791.32	177,045	224	174	7.7	6.0	3.3	1.44	96.7	2.06	2,288,317	456	13.53
A. C. L.	6,628.95	1,835,821	277	180	9.4	6.2	18.0	1.63	82.0	2.30	19,443,476	603	9.20
C. of G.	2,261.47	325,860	144	153	4.9	5.2	0.5	1.81	99.5	1.66	6,690,282	240	4.71
C. & W. C.	425.91	114,917	270	186	9.3	6.4	25.9	1.95	75.1	2.31	1,230,639	600	20.68
C. N. O. & T. P.	771.00	56,952	74	57	2.5	1.9	...	...	100.0	2.44	2,265,376	180	1.33
Clinchfield	398.10	60,237	151	175	5.0	5.8	46.2	1.30	53.8	2.29	1,210,227	277	2.69
Col. & Green.	204.77	35,616	174	167	5.5	5.3	1.1	0.69	98.9	2.11	648,711	364	25.25
F. E. C.	1,254.86	196,170	156	165	5.4	5.8	7.0	1.68	93.0	2.51	3,611,044	383	5.88
Ga.	435.75	87,211	200	231	6.5	7.5	66.1	1.87	33.9	2.25	1,337,761	400	7.01
G. & F.	457.20	89,332	195	262	7.2	9.7	100.0	1.32	...	...	1,234,440	258	18.97
G. S. & F.	463.94	66,456	143	130	4.6	4.2	84.0	1.51	16.0	2.45	1,460,197	238	5.50
G. & Ship. Is. (period ending Dec. 25, 1945)	302.87	64,192	212	231	6.8	7.5	...	...	100.0	2.02	937,304	428	15.32
G. M. & O.	2,034.46	557,205	274	302	8.6	9.5	4.9	1.25	94.5*	2.09	6,445,105	560	10.30
I. C. (inc. G. & S. I., Dec. 26 to Dec. 31, 1945)	7,807.69	1,331,613	171	191	5.6	6.3	...†	1.32	100.0	2.09	23,818,444	357	4.27
L. & N.	6,713.63	900,126	134	151	4.7	5.3	...	0.80	100.0	2.03	19,218,350	272	3.14
Miss. Cent.	177.90	24,157	136	189	4.3	6.0	...	...	100.0	2.19	560,383	297	14.63
N. C. & St. L.	1,455.87	258,456	178	168	6.5	6.1	...	...	100.0	2.16	3,997,819	383	5.26
N. O. & N. E.	289.76	72,428	250	166	8.7	5.6	4.0	2.52	96.0	2.73	834,732	680	5.81
Nor. Sou.	852.11	190,706	224	299	7.7	10.2	53.5	1.40	46.5	2.41	2,485,625	419	18.65
S. A. L.	5,297.76	983,702	186	191	6.1	6.3	6.0	1.62	94.0	2.12	16,028,735	388	5.32
Southern	8,584.62	1,163,663	136	162	4.4	5.2	4.9	1.56	95.1	2.46	26,580,346	327	4.33
Tenn. Cent.	342.85	47,719	139	225	4.6	7.4	44.1	1.30	55.9	2.28	1,038,150	257	9.04
W. of Ala.	184.37	43,398	235	257	7.7	8.4	68.2	1.90	31.8	2.41	561,479	485	6.92
V. & M. V.	2,026.95	598,992	296	282	9.7	9.2	...†	1.21	100.0	2.09	6,183,638	617	14.90
Total	50,857.40	9,439,035	186	184	6.2	6.1	9.8	1.57	90.1*	2.19	152,210,689	395	5.58
Northwestern Region:													
C. & N. W.	11,210.44	1,607,935	143	122	4.8	4.1	2.8	1.11	97.2	1.89	33,235,343	267	5.78
C. G. W.	1,876.51	237,397	127	145	4.3	4.9	22.5	1.55	77.5	2.27	5,567,219	266	4.37
C. M. St. P. & P.	13,519.85	2,116,654	157	160	5.1	5.2	9.4	0.79	90.6	2.02	41,874,562	297	5.53
C. St. P. M. & O.	2,149.88	305,031	142	146	4.8	4.9	1.1	1.07	98.9	2.18	6,374,306	307	8.05
D. M. & I. R.	1,087.68	71,668	66	104	2.2	3.5	13.4	1.22	86.6	2.16	3,240,238	134	2.01
D. S. S. & A.	519.79	76,946	148	164	4.6	5.6	26.5	1.12	73.5	1.97	1,667,565	258	11.42
D. W. & P.	207.00	71,870	347	340	11.8	11.6	15.3	1.30	84.7	1.84	609,038	609	14.41
G. N.	10,207.04	1,520,471	149	155	4.8	5.0	1.1	0.87	98.1*	1.93	31,565,280	286	4.78
G. B. & W.	281.56	63,350	225	304	7.2	10.4	28.9	1.24	71.1	2.55	878,534	490	17.55
L. S. & I.	236.47	40,333	171	148	5.7	5.0	61.1	1.15	38.9	2.61	709,410	293	34.00
M. & St. L.	1,563.98	225,252	144	167	4.8	5.5	16.7	1.24	83.3	1.89	4,724,420	256	9.93
M. St. P. & S. S. M.	4,808.70	444,187	92	105	3.1	3.6	8.1	1.06	91.9	2.00	14,178,933	178	5.48
N. P.	9,210.35	830,550	90	118	3.1	4.1	1.7	1.16	98.3	1.71	26,740,700	154	2.63
Spok. Int.	177.22	60,620	342	376	11.8	12.9	100.0	1.19	...†	1.97	515,047	405	22.95
S. P. & S.	1,122.73	261,771	233	288	7.7	9.6	2.4	0.65	97.6	1.91	3,420,592	438	6.66
Total	58,179.20	7,934,035	136	143	4.5	4.8	7.0	1.05	92.9*	1.95	175,301,187	257	5.04
Central Western Region:													
Alton	1,506.50	284,067	189	195	6.2	6.5	37.3	1.59	62.6*	2.70	4,548,337	431	6.20
A. T. & S. F.	19,161.46	1,921,865	100	93	3.3	3.1	...†	2.08	100.0	1.72	58,193,354	173	1.83
C. B. & Q.	11,877.61	2,001,380	169	183	5.5	5.9	...	...	98.4*	1.89	36,678,060	319	5.18
C. R. I. & P.	9,587.02	1,344,314	140	127	4.7	4.3	...	...	100.0	2.08	28,658,013	292	4.57
C. & S.	829.27	85,606	103	102	3.4	3.4	...	...	93.7*	1.98	2,487,810	205	26.52
C. & W.	108.93	6,145	56	78	2.0	2.8	...	...	100.0	2.99	313,954	169	69.20
D. & R. G. W.	3,151.57	127,179	40	37	1.3	1.2	...†	0.49	70.1*	2.06	9,820,732	83	1.10
D. & S. L.	323.39	51,532	159	176	5.3	5.8	...	...	100.0	2.22	974,730	354	11.78
F. W. & D. C.	947.00	108,203	114	96	3.8	3.2	...	...	96.3*	2.05	2,850,164	235	48.63
Northwestern Pac.	420.76	99,841	237	233	8.2	8.0	72.8	1.72	27.2	1.79	1,218,657	413	16.06
S. P.	11,855.47	1,893,022	160	127	5.1	4.1	6.4	1.37	93.5*	1.80	36,868,600	283	2.40
T. P. & W.			*	*	*	*	...	...	...	...	...	...	...
U. P.	13,156.33	1,836,529	140	169	4.9	6.0	0.4	1.27	99.6	1.66	37,158,401	232	1.97
Utah	71.46	4,702	66	80	2.3	2.8	11.0	1.29	88.0*	2.52	202,961	157	2.91
W. P.	1,525.04	403,008	264	237	8.8	7.9	57.9	1.44	42.0*	2.23	4,564,191	468	3.84
Total	74,521.81	10,167,393	136	134	4.5	4.4	5.3	1.49	93.7*	1.85	224,537,964	250	2.80
Southwestern Region:													
B. S. L. & W.	148.78	23,295	157	170	5.3	5.7	...	...	100.0	1.97	442,900	309	1.94
B.-R. I.	177.90	14,945	84	77	2.7	2.4	...	...	100.0	1.58	556,827	133	2.46
I.-G. N.	1,419.52	174,747	123	116	4.1	3.9	...	...	100.0	2.00	4,254,000	247	4.10
K. C. S.	1,238.30	103,228	83	293	2.6	9.2	0.1	1.13	99.9	1.93	3,922,620	161	1.85
K. O. & G.	352.49	12,609	36	45	1.2	1.5	...	...	100.0	1.86	1,043,370	67	2.00
L. & A.	863.64	111,968	130	414	4.0	12.7	...	...	100.0	1.97	2,811,576	255	5.42
M. V.	358.68	12,323	34	56	1.2	1.9	...†	0.20	100.0	1.81	1,061,693	62	5.99
M. & A.	358.65	123,331	344	352	11.0	11.3	56.0	1.02	44.0	1.70	1,116,674	454	26.67
M.-K.-T.	3,909.43	615,303	157	252	5.0	8.0	...	...	100.0	2.05	12,296,700	323	5.13
M. P.	8,932.88	807,835	90	121	2.9	3.9	2.7	1.20	98.3	1.77	27,565,175	159	2.01
N. O. T. & M.	224.47	25,328	113	173	3.7	5.7	...	...	96.2*	1.97	686,700	222	2.83
O. C.-A.-A.	138.46	32,215	233	237	8.1	8.3	1.2	0.27	98.8	1.88	398,765	433	42.44
St. L. B. & M.	756.68	110,568	146	155	4.8	5.1	...	...	100.0	1.89	2,288,900	276	4.58
St. L.-S. F.	6,238.26	665,687	107	121	3.4	3.9	20.8	1.25	79.2	1.71	19,639,591	172	2.94
St. L. S. F. & T.	154.57	9,449	61	105	2.0	3.4	16.9	1.14	83.1	1.67	483,541	97	1.90
St. L. Sw.	1,874.34	368,194	196	182	6.2	5.7	...	...	99.2*	1.98	5,891,601	389	4.37
S. A. U. & G.	359.96	41,152	114	118	4.0	4.1	...	...	100.0	1.84	1,038,100	210	10.23
T. & N. O.	5,553.48	675,420	122	130	4.4	4.7	...†	1.01	100.0	1.62	15,312,052	197	3.05
T. & P.	2,350.64	451,875	192	214	6.6	7.3	...	...	100.0	1.93	6,864,125	370	4.26
Tex. Mex.	202.45	29,062	144	136	4.5	4.3	17.1	1.48	82.9	1.93	641,362	266	25.22
Total	35,613.58	4,408,534	124	162	4.1	5.3	5.2	1.18	94.7*	1.84	108,316,272	224	3.29
Grand Total—U. S.	331,200.93	43,731,792	132	139	4.4	4.6	5.6	1.39	94.0*	2.07	992,524,546	269	3.39
Canadian Roads:													
C. N. R.	26,919.00	4,277,651	159	179	5.4	6.1	37.5	1.14	62.5	1.73	78,867,848	240	5.74
C. P. R.	21,119.00	3,136,964	149	143	5.2	5.0	49.2	1.14	50.8	1.92	60,749,958	230	4.76
Ont. Nor.	693.60	129,583	187	187	6.6	6.6	93.1	1.08	6.9	1.85	1,970,550	212	7.52
			*	*	*	*							

* Owing to the fact that the total number of ties inserted on some roads included second-hand ties, ties other than wood and tie blocks, the percentages of treated and untreated ties do not total 100 per cent in all cases.

† Less than 0.1 per cent.

†† These are storekeepers' average costs for the ties charged out and used. They are not the actual costs or the price paid for ties purchased during the period.

GENERAL NEWS

Kendall Still Worried About Car Situation

Calls for "maximum cooperation"; box car supply tightest in 25 years

Maximum cooperation by "all concerned" to relieve the present and anticipated strain of freight car shortages was urged last week by Chairman W. C. Kendall of the Car Service Division, Association of American Railroads, in his latest monthly report on the "National Transportation Situation." Pointing out that deficiencies continue in certain types of freight cars—notably hopper, box and refrigerator — Mr. Kendall said that the problem has been further complicated by the fact that the railroads have not been able to reduce the large number of bad order cars, because of the lack of skilled mechanics and inability to procure needed materials, particularly lumber.

"Heavy demands are being made on the Car Service Division for assistance from all quarters, railroads, shippers and receivers alike," he said. "The complaints which admittedly are numerous, are general indicating the difficulties are probably equitably distributed. Eastern sections, usually well taken care of, have had to sacrifice and share."

Loading Trend Up—Although he reported that carloadings thus far this year "have as a whole been less than for the corresponding period last year," Mr. Kendall said that except for the general business holiday around July 4 the recent trend shows a "rapid and heavy increase." He attributed the decrease in carloadings to the recent railroad and coal strikes and the general freight embargo occurring in the 10 weeks ended June 8. Meanwhile he pointed out that another record grain crop is now being moved and that additional transportation problems have resulted from the requirements of the export famine relief program.

With respect to specific equipment, Mr. Kendall said that the supply of box cars "is tighter at the present time than for any period during the past 25 years." He noted that box car loadings during June averaged 381,725 weekly, and that for the week ended June 29, they totaled 392,850 cars, the highest "up to date" and in excess to the week ended May 11—just prior to the general embargo—when 391,532 were loaded.

"During the six weeks, June 1 to July 13, approximately 29,000 empty box cars were delivered via the several western gateways to the western roads," he revealed. "Notwithstanding this substantial allocation, it has not been possible to fully meet the requirements."

The C. S. D. chairman said that the strain on automobile freight cars was less than anticipated because of the interruption to automobile production schedules, but that the demand for livestock and ventilated box cars remained heavy. He added that because of extensive loading requirements, it has been necessary to augment the supply of ventilated cars by using rough box cars.

As for open top cars, Mr. Kendall reported that the national forecast of shippers' advisory boards for the third quarter of 1946 indicated that approximately 200,000 more cars of coal, coke, ore, sand, stone and gravel would be loaded this year than during the corresponding 1945 quarter. He added that railroads will have to continue their present program of expeditious handling and movements of coal cars, particularly in the volume movement of coal to ports on the Great Lakes and to the northern areas before the winter season.

Mr. Kendall said that there are sufficient gondolas, "if used expeditiously"; that no serious flat car deficiencies are anticipated and that demands for covered hoppers, of which 300 were delivered to railroads in June, are in excess of the supply. He added that car builders have promised the delivery of an additional 2,700 covered hoppers by fall.

"Perishable loading continues at record level high," the C. S. D. chairman continued. "Due to the general tightness of the situation and in order to conserve the available supply of cars to protect the movement of more perishable commodities, it has been necessary to further restrict their use by prohibiting the loading of canned goods, bottled beer, bottled wine and empty beer containers in refrigerator cars." He said that the total perishable loading from January 1 to June 29 was 865,996 cars, compared with 820,316 cars in the corresponding 1945 period, an increase of 5.5 per cent, and that fruit and vegetable loading was 9.5 per cent greater during the same period. Additional increases also were forecast for July.

Freighthouses "Fluid" — Mr. Kendall noted further that the extraordinary heavy volume of merchandise freight delivered to carriers in the latter part of June was "possibly influenced by the increase in rates effective July 1."

"With a holiday and Sunday occurring in the first seven days of July, the number of cars held at many freighthouses increased considerably," he declared. "However, with a substantial decrease in traffic delivered the railroads during the early part of July, and as the result of much overtime work, current reports show a large reduction in cars awaiting handling at freighthouses throughout the country. At a great many points, where the supply on hand had been equal to one or two days operation, the

(*Continued on page 144*)

Deficits Feared by Railroad Executives

Term rate increases necessary if carriers are to keep credit sound

Hearings before the Interstate Commerce Commission in the railways' request for a general increase in freight rates, docketed as Ex Parte No. 148 and Ex Parte No. 162, were reopened on July 22 in Chicago before commissioners Clyde B. Aitchison (presiding), Charles D. Mahaffie, Walter M. W. Splawn and J. Haden Alldredge. Represtratives of the Railroad & Public Utilities Commission of Tennessee, the Public Utilities Commission of Idaho, the Public Service Commissions of Indiana, South Carolina and North Dakota, and of the Iowa State Commerce Commission cooperated in the hearing.

At the opening session Walter R. McDonald, chairman of the Georgia Public Service Commission, speaking on behalf of states and commissions in Southern Freight Association and Southwestern territories, and of Kansas, Nebraska and North and South Dakota, requested that the I. C. C. postpone the hearings for not less than 120 days and that in the meantime the carriers be required at the end of 30 days to present to the commission and to the states a statement reflecting the effect of the increases already granted by the I. C. C. Mr. McDonald's motion was concurred in by James A. Knudson, appearing for the secretary of agriculture of the United States, and Elmer W. Cant, representing the North Dakota Farmers' Union and the National Farmers' Union. The motion was denied.

Dr. Parmelee's Data — Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, Association of American Railroads, followed as the first witness for the day for the carriers, presenting statistics which he described as similar to those he presented at the hearings held in Washington, D. C., during May.

Dr. Parmelee stated that the rail carriers expect, in 1946, to handle a greater volume of freight and passenger traffic than in any previous peace-time year, but much below the levels of the four war years 1942 to 1945, inclusive. He asserted that the decline of traffic from war-time levels, plus the increased wage rates "on top of those imposed in 1941 and 1943" and rising prices, were the foundations of the railroads' demands for increased wages.

According to the witness, railroad freight revenues in the first five months of 1946 decreased $768 million and passenger revenues decreased $102 million under the corresponding period of 1945, while operating

expenses decreased only $85 million. Further, he said, 1945 operating expenses were inflated by the inclusion of $94 million in amortization charges which do not normally occur, so that actually operating expenses increased $9 million in the face of a decline of 23.5 per cent in revenues and of 4.2 per cent in the average number of employees. Net income, after charges, of $274 million in the first five months of 1945 was replaced by a net deficit of nearly $43 million in the corresponding period of the current year.

Concerning current trends in railway traffic, Dr. Parmelee said that freight revenues for June, 1946, based on preliminary estimates, were 24.8 per cent under June, 1945; passenger revenues had dropped 29.4 per cent; all other revenues declined 21.2 per cent; and total revenues had fallen 25.4 per cent. The cumulative totals for the first six months showed declines of 26.0 per cent in freight revenues; 17.9 per cent in passenger revenues; 16.5 per cent in all other revenues; and 23.9 per cent in total revenues.

Reserves Endangered Already—As a result of increased costs and declining revenues he estimated that, excluding material and supply inventories, the excess of current assets over current liabilities of Class I roads had fallen $287 million, or 17.3 per cent, in the first five months of this year, a trend which, if continued, he pointed out, would soon exhaust the railroads' cash reserves.

Average hourly straight-time wage rates of the railroads are calculated to be 111.8 cents at the present time, including the full amounts of the increases recently granted, or 19.8 per cent greater than the average of 93.3 cents prevailing in 1945, and 51.1 per cent greater than 1939's average of 74.0 cents per hour. The general price index of railway materials, he said, based on May, 1933, prices as 100, stood at 178.2 in December, 1945; 188.2 in April, 1946, and 193.8 in June, 1946.

Since 1939, Dr. Parmelee continued, the railroads had absorbed over $2 billion annually in increased costs, based on prospective 1946 operations, but had enjoyed rate increases totaling only about $450 million annually. For 1946, he estimated that total railway revenues will amount to $7,270 million, operating expenses, $6,170 million, and net railway operating income $402 million. Final results are expected to show a net deficit, after charges, of $18 million this year, compared with net income of $447 million in 1945.

In a final statement Dr. Parmelee analyzed the ability of various commodity groupings to absorb additional freight rates. Comparing 1941 levels with those prevailing in 1946, he said that if transportation charges in 1946 were revised so that they constituted the same proportion of the total value of various products, freight rates would have to be raised by 35 per cent on food products, 67 per cent on farm products, 19 per cent on manufactures and miscellaneous, 13 per cent on fuels and 17 per cent on all other freight traffic.

"Alarming Situation" — Howard S. Palmer, president and trustee of the New York, New Haven & Hartford, followed Dr. Parmelee as a carrier witness. "Like other railroads throughout the country," he explained, "the New Haven is confronted with increased expense of operation primarily because of increases in wages and prices of materials, including fuel. This increased expense, coupled with a decline in freight and passenger business, both in volume and revenue, is resulting in a serious decline in operating income and net income. The situation is critical and alarming."

For the first five months of 1946, he said, the New Haven had a net railway operating deficit of $1,591,133 and a corporate deficit of $4,691,196. For the year, the road anticipates operating revenues to total $149,350,000 and operating expenses to amount to $149,375,000. If current wages and freight and passenger rates had been in effect in 1941, a year he termed as "more nearly normal," the road would have failed to earn its operating expenses by $5,207,000 instead of enjoying a net railway operating income of $16,925,000 as it did.

Mr. Palmer said that his road has undertaken to repair only such motive power as it anticipates it will need for its prospective traffic. In the maintenance of way field overtime has been reduced to 1941 levels, but there has been no other curtailment of the road's maintenance program. Transportation expenses are being held to a minimum, with train loadings the best in record for the equivalent volume of traffic.

Fewer Jobs Soon—"The New Haven has not as yet made any reduction in the total number of employees because of the increased work we are doing on maintenance of way in an endeavor before reorganization of the property is completed to restore more of the life taken out of the property by the intensive war use. However," he declared, "with the reduced traffic volume and the increased wage and material costs, it is clear to me that unless there is a substantial increase allowed in the price that we may charge for our service, drastic force reductions will be necessary late in 1946."

The final carrier witness for the day was H. A. Scandrett, president of the Chicago, Milwaukee, St. Paul & Pacific, who stated that for the first six months of this year the Milwaukee had a net income deficit of $3,603,083, after allowing for a credit of $4,662,000 for excess profits tax carry-back, or a deficit of $8,265,083 if no tax allowance were made. In spite of a decrease of $21,863,000, or 19 per cent, in total operating revenues, operating expenses rose $1,850,000 during this time.

Maintenance Deferred—Since 1940, he said, wage rates have increased 48.9 per cent, or $33,900,000 for the year based on 1946 traffic levels; fuel costs 44 per cent, or $3,400,000; other materials 41 per cent, or $9,283,000. Maintenance work estimated to cost over $4 million has already been deferred, Mr. Scandrett said, in order to endeavor to "have enough income to offset the deficit in the first six months and to service fixed and contingent interest and other charges, but there is a very grave question in my mind that we will be able to achieve this result unless we are given prompt relief in the way of a larger freight rate increase."

At the conclusion of the day's hearing A. F. Elder, representing the Central of New Jersey, filed a petition asking that any order increasing rates require that where carriers receive specific amounts as compensation out of through rates or fares, such amounts shall be increased by the same percentage as the through rates or fares are increased.

Freight Car Loadings

Loadings of revenue freight for the week ended July 20 totaled 921,496 cars, the Association of American Railroads announced on July 25. This was an increase of 26,416 cars, or 3.0 per cent, above the preceding week, an increase of 38,848 cars, or 4.4 per cent, above the corresponding week last year, and an increase of 19,404 cars, or 2.2 per cent, above the comparable 1944 week.

Loading of revenue freight for the week ended July 13 totaled 895,080 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, July 13

District	1946	1945	1944
Eastern	166,276	159,628	162,420
Allegheny	190,364	197,341	198,918
Pocahontas	63,007	54,156	57,641
Southern	131,346	124,859	125,488
Northwestern	135,906	133,345	140,195
Central Western	139,731	139,985	142,220
Southwestern	68,450	74,229	77,011
Total Western Districts	344,087	347,559	359,426
Total All Roads	859,080	883,543	903,901
Commodities:			
Grain and grain products	59,027	65,645	62,536
Livestock	20,375	13,293	14,576
Coal	189,628	175,150	179,450
Coke	13,393	14,661	14,249
Forest products	45,730	43,502	48,519
Ore	75,859	77,255	86,729
Merchandise l.c.l.	121,393	104,920	101,476
Miscellaneous	369,675	389,117	396,366
July 13	895,080	883,543	903,901
July 6	679,785	726,663	744,347
June 29	879,545	893,947	897,210
June 22	838,437	876,703	880,311
June 15	867,918	873,322	877,493
Cumulative total, 28 weeks	20,590,954	22,888,752	22,933,449

In Canada.—Car loadings for the week ended July 13 totaled 70,078 cars as compared with 60,623 cars for the previous week, and 73,561 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

Totals for Canada:	Revenue Cars Loaded	Total Cars Rec'd from Connections
July 13, 1946	70,078	31,282
July 14, 1945	73,561	33,711
Cumulative totals for Canada:		
July 13, 1946	1,863,196	944,632
July 14, 1945	1,908,034	1,031,582

Pullman-Standard to Boost Daily Car Production

Coincident with the completion of its one-hundredth post-war railway passenger car, which was delivered recently to the New York Central, the Pullman-Standard Car Manufacturing Company has announced that it is striving by every means to bring production up to six cars plus per day despite the fact that the flow of materials from the outside is still "chaotic."

The one-hundredth car which rolled off the assembly line on July 17, was the eightieth to be delivered to the New York Central, the remaining 20 having been delivered to the Chicago & North Western some time ago. Wallace N. Barker, ex-

ecutive vice-president of the company, pointed out that had not strikes in outside industries interfered with the receipt of materials the company would have delivered 476 new passenger cars to several railroads by July 1. He also reported that more than 150 nearly-finished cars are standing in Pullman-Standard yards, undelivered because of a lack of various materials and fittings.

At the present time the company has orders for 1,445 main line passenger cars and work is under way on streamlined equipment for the New York Central, Atchison, Topeka & Santa Fe, Pere Marquette, Chicago & Eastern Illinois, Great Northern and the Northern Pacific.

Frederick Will Be Adviser in Lea Transport Inquiry

Dr. John H. Frederick, professor of transportation at the University of Maryland, has been employed by the House committee on interstate and foreign commerce to act in an advisory capacity in connection with the committee's "National Transportation Inquiry." In announcing the appointment, Chairman Lea of the committee said that Dr. Frederick will have charge of the assembling and analysis of material submitted to the committee in response to the "questionnaire" which it distributed last August.

As Mr. Lea pointed out, presentations were invited by the committee "in reference to all phases of transportation problems." Nearly 500 statements have been received, he said, adding that "in due time this information will be available to the public." Mr. Lea estimates that it will take the committee another year to complete its study. Of Dr. Frederick, the chairman's statement had this to say:

"Dr. Frederick is highly recommended to the committee. For five years he was an instructor in commerce and transportation at the Wharton School of the University of Pennsylvania, and for nine years professor of marketing at that institution. He was professor of transportation and industry at the University of Texas for the last eight years. Recently he resigned to take charge of transportation courses at the University of Maryland. Dr. Frederick is author of several books devoted to marketing and transportation problems."

Short Lines File Complaint Against $1.15 Per Diem

Formal complaint against the $1.15 freight-car per diem rate which has been in effect since February 1, 1945, has been filed with the Interstate Commerce Commission by 162 short-line railroads who ask that the rate be cut to 95 cents or such other basis as the commission may determine to be just and reasonable and that reparations be awarded. The complaint is a substitute for a previous one filed last March by the American Short Line Railroad Association for the account of its members, but later withdrawn in order to meet the commission's view that both complainants and defendants should be specifically named.

The present complainants are members of the Short Line Association who have specifically authorized President J. M. Hood to file the complaint, the association's vice-president and general counsel, C. A. Miller, being attorney for complainants. The defendants are subscribers to the Car Service and Per Diem Agreement.

As the complaint recalls, the Short Line Association petitioned the commission in January, 1945, for an investigation of the reasonableness of the $1.15 per diem rate then about to be established in lieu of the $1 rate which had been in effect from November 1, 1920. As noted above, the $1.15 rate became effective February 1, 1945; and on February 4, 1945, the association's petition for an investigation was denied by the commission—without prejudice to the filing of a formal complaint.

The complaint also recalls the "Study of Per Diem Costs of Car Ownership and Per Diem Charges for Freight Cars," issued early this year by the commission's Bureau of Transport Economics and Statistics, as noted in the *Railway Age* of March 9, page 521. The complaint interprets that study as one which shows "that the per diem charge of $1.15 per car per day is unjust and unreasonable." It then goes on to ask the commission "after due hearing and investigation" to issue an order requiring the defendants to cease and desist from making the $1.15 charge. Then follows the request for the establishment, with awards of reparations, of a rate of 95 cents or whatever the commission may find to be "just and reasonable."

Test Radio Warning Device

The new Slowtone radio device, which broadcasts warning signals at least five miles from a train, and still permits radio conversations between members of the train crews, is being tested on the Chicago & North Western between Chicago and Council Bluffs, Iowa. This was reported by L. L. White, vice-president in charge of operations of the North Western, who explained that the tests are being conducted in collaboration with Bendix Radio division of Bendix Aviation Corporation. Exhaustive tests with radio communication are being conducted on freight trains between locomotive cab and caboose as well as between moving trains and fixed stations.

The new Slowtone device designed by Bendix Radio division was described in *Railway Age* of June 8, page 1141. It involves the broadcasting of a series of high pitched notes at four-second intervals, allowing for voice communication at the same time. The purpose of the signals from any particular train is to warn other approaching trains in all directions of its presence. The signals can be heard at a distance of at least five miles from their transmitting point on radio receivers of other trains of the railroad. Both the Slowtone signals and radio telephone communications in the current tests are designed to prove the practicability of V. H. F. (very high frequency) apparatus for railroad use.

Mr. White, in citing the importance of the tests, which took place near Nelson, Ill., predicted that a wide use of V. H. F. train radio would eventually develop in scheduled train operation, including the possible application of a radio warning signal which might prove valuable as an added safety device.

W. P. Hilliard, general manager of Bendix Radio division, stated that the V. H. F. radio warning signal held promise of contributing to safety in railroad operations, but could not be expected to avoid accidents caused by disregard of existing railroad safety rules. Continuing, Mr. Hilliard deplored over-optimistic forecasts in visualizing the use in the near future of radar sets to "see" track obstructions from trains. "The success obtained with radar in locating airplanes and surface vessels has endowed it in the public mind with magical properties which the facts simply do not bear out", said Mr. Hilliard. "While further research and development may eventually result in improvements which will solve the problems of 'seeing' around curves or behind hills, at the present time techniques and equipment have not advanced to a point where satisfactory results can be expected from the use of radar on trains."

Carnegie Steel Output Cut By Freight Car Shortage

Because of a severe shortage of railroad freight cars, the Carnegie-Illinois Steel Corporation, a subsidiary of the United States Steel Corporation, has reported that it has been forced to curtail production at its South Chicago plant, which will reduce the daily steel output at that plant and affect more than 3,000 employees. Other steel companies, while declaring the car shortage acute, said they had no immediate plans for revising production schedules.

The first move by Carnegie-Illinois to cut production came on July 23, when the company banked two blast furnaces and six open-hearth furnaces. This was followed 24 hours later by the stoppage of operations of three rolling mills.

According to company officers at least 250 freight cars were needed to move 14,000 tons of steel awaiting shipment at the company's plant. In addition, it was said to need 50 cars at its Gary (Ind.) steel works and 75 cars at the Gary steel and tin mills.

Box Car Loadings Exceed All Records, Says Hungerford

Box car loadings currently are at a rate greater than that prevailing during the war, Clark Hungerford, vice-president, operations and maintenance, of the Association of American Railroads, told the Mid-West Shippers Advisory Board at a luncheon meeting at Burlington, Iowa, July 18. The movement of 392,580 carloads of box car freight for the week ended June 29 was 6.6 per cent above the box car loadings of the last week of the war. To meet this demand for approximately 400,000 box cars weekly there are some 700,000 serviceable box cars available, he pointed out, which means that shippers and carriers alike must see that the maximum possible use is obtained from each car. Prompt movement and release of box cars, including week-end unloading, he declared, are essential if such a program is to succeed.

In discussing the causes of this unprecedented demand for box cars, Mr. Hungerford called attention to the fact that l.c.l. loadings are now about 15 per cent above the average for 1945, and that for the week ended June 29, they were 21 per cent above the corresponding 1945 week. A change in the character of freight is also noted, with

Selected Income and Balance-Sheet Items of Class I Steam Railways

Compiled from 129 reports (Form IBS) representing 133 steam railways
(Switching and Terminal Companies Not Included)

Income Items	All Class I Railways — For the month of April 1946	1945	For the four months of 1946	1945
1. Net railway operating income	$10,127,741	$95,065,325	$118,834,376	$344,945,307
2. Other income	13,790,237	13,101,582	53,234,823	58,035,052
3. Total income	23,917,978	108,166,907	172,069,199	402,980,359
4. Miscellaneous deductions from income	2,230,204	2,557,314	9,614,440	10,063,451
5. Income available for fixed charges	21,687,774	105,609,593	162,454,759	392,916,908
6. Fixed charges:				
Rent for leased roads and equipment	9,854,685	11,936,055	38,145,435	49,363,248
Interest deductions[1]	29,885,157	30,884,387	119,178,560	125,342,678
Other deductions	121,786	106,521	470,951	428,456
Total fixed charges	39,861,628	42,926,963	157,794,946	175,134,382
7. Income after fixed charges	*18,173,854	62,682,630	4,659,813	217,782,526
8. Contingent charges	2,819,632	3,261,014	11,482,054	12,704,306
9. Net income[2]	*20,993,486	59,421,616	*6,822,241	205,078,220
10. Depreciation (Way and structures and Equipment)	28,480,926	27,707,595	113,533,692	110,133,249
11. Amortization of defense projects	693,746	19,860,733	2,338,765	77,619,661
12. Federal income taxes	*6,620,988	91,447,692	17,591,847	371,659,027
13. Dividend appropriations:				
On common stock	3,210,609	4,105,279	44,863,707	28,847,692
On preferred stock	789,133	1,281,646	15,574,140	8,600,591
Ratio of income to fixed charges (Item (5÷6-04)	0.54	2.46	1.03	2.24

Selected Assets and Liability Items	All Class I Railways — Balance at end of April 1946	1945
17. Expenditures (gross) for additions and betterments—Road	$65,701,212	$63,532,185
18. Expenditures (gross) for additions and betterments—Equipment	68,398,759	89,717,525
19. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	586,987,850	563,124,612
20. Other unadjusted debits	164,352,766	242,458,784
21. Cash	1,042,587,679	1,128,287,887
22. Temporary cash investments	1,442,036,798	1,855,495,783
23. Special deposits	218,509,560	221,785,315
24. Loans and bills receivable	455,116	401,087
25. Traffic and car-service balances—Dr.	41,921,604	57,408,912
26. Net balance receivable from agents and conductors	94,725,047	140,526,077
27. Miscellaneous accounts receivable	394,952,714	602,508,112
28. Materials and supplies	608,270,550	610,178,341
29. Interest and dividends receivable	29,099,462	35,409,512
30. Accrued accounts receivable	198,953,719	279,950,103
31. Other current assets	36,204,200	51,855,280
32. Total current assets (items 21 to 31)	4,107,716,449	4,983,806,409
40. Funded debt maturing within 6 months[3]	124,424,795	131,849,108
41. Loans and bills payable	10,854,058	11,485,000
42. Traffic and car-service balances—Cr.	109,184,828	181,980,016
43. Audited accounts and wages payable	480,710,861	445,521,438
44. Miscellaneous accounts payable	177,555,246	200,364,186
45. Interest matured unpaid	63,359,568	54,565,364
46. Dividends matured unpaid	10,843,797	3,757,975
47. Unmatured interest accrued	54,645,043	58,972,044
48. Unmatured dividends declared	14,898,508	15,802,842
49. Accrued accounts payable	278,025,166	206,730,614
50. Taxes accrued	692,986,232	1,740,713,192
51. Other current liabilities	149,394,986	133,244,859
52. Total current liabilities (items 41 to 51)	2,042,458,293	3,053,137,530
53. Analysis of taxes accrued:		
U. S. G Government taxes	559,571,737	1,600,587,698
Other than U. S. Government taxes	133,414,495	140,125,494
54. Other unadjusted credits	405,144,203	551,000,395

[1] Represents accruals, including the amount in default.
[2] After deduction of the following amounts to create reserves for land grant deductions in dispute; April 1946, $131,808; April 1945, $3,618,629; 4 months of 1946, $887,806; 4 months of 1945, $13,727,451.
[3] Includes payments of principal of long-term debt (other than long-term debt in default) which will become due within six months after close of month of report.
* Decrease or deficit.

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.

the wartime manufacturer of tanks and armament and similar items which were handled in open top equipment often devoting his energies to the production of civilian products which require box cars for their movement.

In addition to these factors, there is now under way a record movement of grain for export, 26,385 carloads of grain having been delivered to the ports in June for export, as compared with 20,779 carloads in January, the previous peak. For the first six months of this year export grain traffic amounted to 98,567 carloads, 62 per cent above the corresponding period of 1945.

"These combined factors," Mr. Hungerford declared, "have resulted in an unprecedented demand for box car equipment, particularly for Class A cars, which could not have been met to the full by any advance planning on the part of the carriers or the carriers and shippers together."

"However, we should not lose sight of the fact that a tremendous lot of box car freight is being carried, the largest in history, which includes an enormous amount of grain both for domestic use and export—enough indeed to point up the fact that agriculture, on the American scale, calls for transportation on a level which only railroads have a capacity to provide. Here, again, is proof of the ingenuity and resourcefulness of the shippers and the railroads of this country in that the largest volume of box car freight is now being moved with the equipment now available.

"But be that as it may, for many months yet to come it will be necessary that we continue to extend every effort to secure the maximum use of every car, every day, in order that the transportation this country needs can be provided. This means expeditious handling by the railroads, prompt loading and unloading by the shippers and receivers, and that the maximum practicable load be carried by the car. It is not a question of waiting until there are more cars or waiting for the traffic to subside. It is a question of doing the best we can with what we have—and doing it now."

The test of the second World War proved conclusively that "despite all that has been done by other forms of transportations, there was nothing which could do for this country what its railroads can," Mr. Hungerford remarked. "The nation rediscovered the vital importance of its railroads. Never in any former conflict was rail transportation more essential. Rail service established records never before known and then proceeded immediately to break even those records. Passenger-miles, ton-miles reached unheard of figures. Nine-tenths of all military and war freight and 97 per cent of all organized military travel moved by rail."

Such records were made possible, he said, by the "fine cooperation" of shippers and military and naval authorities, with the carriers, and with the aid of the Office of Defense Transportation and the Interstate Commerce Commission. However, such performance took a heavy toll of the freight car supply by reason of intensive use, coupled with inability to replace worn out box cars or build service life back into those not scrapped.

E. C. Bain Gets Sauveur Award

The American Society for Metals has announced that Dr. Edgar C. Bain has been awarded the Albert Sauveur Achievement Award for 1946. Dr. Bain is vice-president in charge of metallurgy and research of the Carnegie-Illinois Steel Corporation, Pittsburgh, Pa., and the award was made on the basis of his conception of a new approach to the heat treatment of steel, which was begun approximately 15 years ago.

Union Calls Pullman Strike

Affecting more than 40,000 workers, including 2,700 are Pullman conductors, the Order of Railway Conductors has called a strike against the Pullman Company, to be effective at 6 p.m., on August 7. The strike order was issued by Harry W. Fraser, president of the union, and instructed members of the organization to "decline to move in trains any sleeping cars or other Pullman-operated cars after the hour set for the strike."

The principal issue between Pullman and the union concerns the application of recently-granted wage increases in which the union is said to demand payment on a daily basis of wage increases of $1.28 per day as of January 1, and an additional 20 cents a day as of May 22. Pullman, on the other hand, has offered a counter-proposal to

break the increases down to an hourly rate and then multiply them by the basic number of hours in a working month.

Both James M. Carry, vice-president of Pullman, and Benjamin C. Johnson, vice-president of the union, have predicted that in the event the issue is not settled by the date set for the strike the dispute will be submitted to an "emergency board" named by President Truman. Pullman service presumably would continue without interruption during the board's consideration of the case.

June Ton-Miles

The volume of freight traffic handled by Class I railroads in June amounted to 49 billion ton-miles, according to a preliminary estimate by the Association of American Railroads. The decrease under June, 1945, was about 21.7 per cent.

Revenue ton-miles of service performed by Class I roads in the first six months of 1946 were approximately 25½ per cent under 1945, and 26½ per cent less than the corresponding period two years ago.

	1946	1945	Per cent change
First 4 months	183,110,987,000	237,983,344,000	*dec.* 23.1
May	[a]39,000,000,000	64,218,052,000	*dec.* 39.3
June	[b]49,000,000,000	62,574,789,000	*dec.* 21.7
Total 6 months	271,100,000,000	364,776,185,000	*dec.* 25.7

[a] Revised estimate.
[b] Preliminary estimate.

The table summarizes revenue ton-miles for the first six months of 1946 and 1945.

Railroad Retirement Board Issues Annual Report

Between July, 1936, and June, 1945, the Railroad Retirement Board paid out $965,000,000 in retirement and survival benefits to more than 400,000 individuals. During the same period nearly 7,000,000 individuals were brought into the coverage of the retirement system. Between July, 1939, and June, 1945, more than $44,000,000 was paid out in unemployment insurance. These figures are contained in the annual report of the Railroad Retirement Board for the fiscal year ended June 30, 1945, recently submitted to Congress.

During the fiscal year $727,697 was paid out in unemployment insurance to 5,850 beneficiaries. There was a sharp increase in the number of retirements to a 5-year peak and 20,770 new employee annuities were awarded, with benefit payments of $119,368,000. The high rate of labor turnover in the industry is shown by the fact that compensation reports for the calendar year 1944 were received for 2,965,000 persons of whom approximately 1,000,000 were new employees. In 1943, the corresponding figures were 2,809,000 and 1,100,000.

Since the average employment figures show an increase of only 8 per cent from 1942 to 1943 and 5 per cent from 1943 to 1944, it is apparent that large numbers of the new employees worked for very short periods of time, often for as little as one day. The higher wage rates granted in 1943, plus increases in overtime, raised the total taxable payroll to $3,887,000,000 in 1943 and $4,281,000,000 in 1944, both of which are new records for the period since the board has been in operation. Even though the payments by the board have increased, the immediate effect of the war was an increase in tax collections and therefore the board had a reserve of $623,000,000 on hand as of June 30, 1945. Since the inception of the board, $23,884,000 have been spent in administrative expenses, but in the fiscal years ending in 1944 and 1945 respectively, the annual average was $2,408,000, which is nearly half a million dollars less than the average for the previous six fiscal years.

The railroad unemployment insurance system is financed by a 3 per cent tax on payrolls paid entirely by the railways. During the 1944-45 fiscal year this sum amounted to $131,936,031, an increase of 8.6 per cent over the preceding fiscal year.

Charts prepared by the board show a rapid and continuing rise in the number of railway employees aged 65 and over in service at some time during each calendar year from 1940 to 1944. In 1940 the figure was just over 40,000, whereas in 1944 the figure was nearly 80,000. The increased retirements in the fiscal year in question will undoubtedly reduce this figure appreciably and the increase was unquestionably caused by the man-power shortage and the high rates of pay, with overtime, possible during the war years, which induced the older employees to stay on instead of retiring.

The effect of the war on unemployment in the railway field is graphically illustrated. In the first year after the Act became effective, the amount paid in benefits was $14,809,692 or more than 20 times greater than the amount paid for the fiscal year in question. An even greater amount—$17,699,137—was paid in unemployment insurance for the fiscal year 1940-41, because of greater benefits allowed by Congress, but in the 1942-43 year such insurance paid amounted to only $547,041 and in the 1944-45 year to $727,697.

In 1938 over 96 per cent of the workers in railway service were men and, during the war years, practically the same ratio was maintained despite the hiring of a considerable number of women. However, in the 1944-45 fiscal year 16 per cent of the total beneficiaries of unemployment insurance were women. This reflects the hiring of women during the period of more acute shortages in occupations previously considered suited for men only. These women were usually the first to be released in reductions of staff and in many cases were replaced by men when the shortages became less acute.

The review of employment service activities of the board in the year in question shows that 646,073 persons were placed in railroad jobs through the activity of the board. During the year a number of special recruiting campaigns were conducted, which included the importation of Mexicans and the recruiting of large numbers of service men for emergency work with the cooperation of the army and navy. Between November 16, 1944, and June 30, 1945, for example, 159,579 service men were so placed. The figures do not include employment of 362,898 casual laborers who were recruited for single day's work only. Returning service men placed during the fiscal year totaled 47,837. This figure will of course rise rapidly in the 1945-46 fiscal year. More than 31,800 students were placed in railway work during the school vacation season.

Kendall Still Worried About Car Situation

(*Continued from page 140*)

records now show approximately a normal situation."

Mr. Kendall said that as the result of a recent conference between the C. S. D. and the Freight Station Section of the A. A. R. and the Lighter-Than-Carload Committee of the National Industrial Traffic League, it is contemplated that a permanent joint committee will be constituted, "providing a channel for contact between railroad officers particularly interested in l.c.l. service and shippers who may have suggestions and advice with respect to railroad l.c.l. performance," in addition to affording an effective channel for protecting methods of loading and billing l.c.l. to accomplish the most direct service with the fewest transfers.

Expects More L. C. L. — "Railroad representatives are fully cognizant of the inadequacies of present l.c.l. service," he commented. "It is believed that due to a large extent these condition are due to unsatisfactory labor conditions and handicapped physical facilities due to unexpectedly heavy volume of traffic offered and the inability to promptly increase platform space and provide additional trucks, trailers and freight handling machinery, an ample supply of which is not yet available. With present and prospective industrial production and the competitive rate situation as it is, it is probably true that there will continue to be an increased volume of l.c.l. freight for rail handling. It is the purpose of railroad officials to overcome present difficulties and furnish adequate service."

Continuing, Mr. Kendall reported that the movement of export freight through United States ports for June was 48 per cent below that of June, 1945—a situation attributed to the decline in military traffic —99,385 cars being unloaded last month as compared to 188,799 in the same month last year. His equipment-supply figures showed that the number of serviceable cars as of July 1 increased by 4,073 over June 1—there were 1,670,461 serviceable cars as of July 1 compared with 1,704,525 on July 1, 1945. As of July 1, 78,239 cars—or 4.7 per cent of all freight cars—were awaiting repairs as compared with 64,859 (or 3.8 per cent) on July 1, 1945.

In his summary of the military transportation situation, Mr. Kendall said that the remaining prisoners of war in the U. S. were en route to ports of embarkation when his report was being prepared. Thus he anticipated release of more coaches for civilian use. He disclosed that military move-

ments in June required the use of 12,524 troop sleepers and Pullman cars, and that during the first 11 days of July, the number of men handled for the Army amounted to 105,500, including 20,280 from overseas. Close to 5,000 agricultural workers also were transported during the same period. Mr. Kendall also noted that with the decrease in military requirements, the wartime car service rules, relating to passenger car handling, were amended to a peacetime basis, effective July 1.

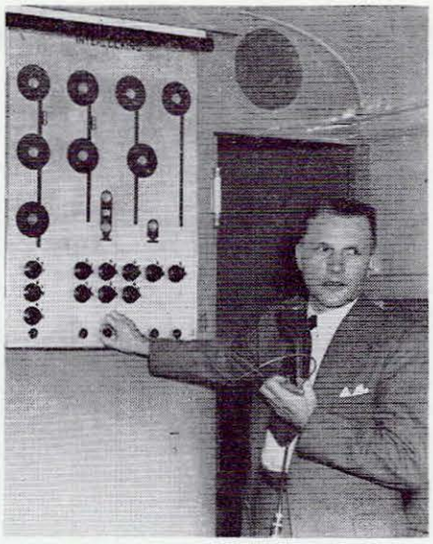
Other data in Mr. Kendall's report indicated that the average turn-around time of serviceable freight cars during June totaled 14.7 days, as compared with 18.3 days in May, 18.4 days in April and 14.9 days in March; and that 18.5 per cent of the cars placed in June were detained for a longer period than the 48 hours free time. This detention, the highest since February, compares with 17.98 per cent for May and 13.7 per cent for June, 1945.

Canadian Pacific Fits Car for Rules Instruction

A modern "safety theatre on rails", designed to give more than 20,000 employees of the Canadian Pacific's eastern lines visual instruction in general train and interlocking rules and safe practices, was delivered this month from the company's Angus shops and is now in year-round service.

While men of the train service trades will see sound films and slides on rules, safety and job instruction and first aid, children will be invited to see motion pictures which will teach them to avoid the hazards of trespassing on railways and help to prevent crossing accidents. To add zest to all classes, a variety of other interesting films will be shown.

The idea of N. R. Crump, general manager of eastern lines, with the general requirements worked out by J. C. McCuaig, general safety agent for eastern lines, the car was built under the direction of H. B. Bowen, chief of motive power and rolling stock, to the design of E. W. Morris, assistant engineer (car).



N. R. Crump, general manager for eastern lines, speaking over the car's public address system in describing the operation of the lighted panels to C. P. R. officers when the car was put on display upon completion at the Angus shops

Formerly one of the company's ten hospital cars which carried thousands of war wounded from seaboard to military hospitals across Canada, it contains the latest in sound-movie equipment, a two-way public address system, and seating accommodation for 60 people. Completely self-contained for its traveling personnel, the car will be in charge of P. W. Raines of Toronto, rules instructor for eastern lines. He will be assisted by each district safety agent while in their territory.

Flanking the translucent screen used for slides are signal panels which give an accurate reproduction of automatic and interlocking signal indications. While the lecturer demonstrates the signal on the panel, the rule that governs the movement of the train will be flashed on the ground glass screen. These slides are projected from the office behind the screen. In this manner there is no chance for misunderstanding, as the class member is given both the indication and the rule governing at the same time. This method can be further extended to illustrate the various terminal and interlocking set-ups and routes governed by different indications.

Film slides on safety will be shown to employees in the various trade classifications. Every film considered of value in safety education is carried on the car. If blackboard explanation is necessary, one is brought into use from above the lecturer where it forms part of the interior ceiling and operates on a counter-balance. Loudspeakers are installed in the projection room, in the business office and three are evenly spaced in the ceiling of the theatre section of the car, enabling everyone to hear the lecturer plainly. Jacks strung along the walls next the seats may be adapted for microphones for the benefit of class members.

Three sources of electric power are provided, one from an axle-driven generator in the usual 30-volt direct current, another by plug-in to permanent wires and the third from a propane-gas operated generator built in the car. A force-draft ventilating system with a high powered exhaust fan ensures a change of air every two minutes in the classroom.

To perfect the sound effects acoustic material has been installed between the car's roof and the perforated interior ceiling. Special blinds black out the car and a bank of floodlights provide ample illumination. In the compact projection room in the extreme end of the car sufficient space is provided for the projectors with shelves under the desk where slides, records and films are indexed with additional space for the recording turntable. The projectionist may operate the lighting or public address system for the entire car from his chair behind the projection machine.

J. C. McCuaig, general safety agent for eastern lines, is lecturing to a class of Canadian Pacific employees on the operation of block signals with the aid of light panels which give an exact replica of the signals' operation on the line. The rule in question is shown on the screen

New New York Travel Guide

Information in tabular form about rail and air passenger services between New York and 29 other cities is contained in a monthly publication, the "Business Traveler," recently initiated by the Transportation Publishing & Research Corporation in New York. In separate tables the compilation lists for each of the selected cities each scheduled train and plane departure from New York, and from that point for New York, showing in separate columns the departure time, arrival time, time en route, and railroad or airline providing the service.

In addition, the airline schedules indicate the flight number, the New York airport used, the meals, if any, provided en route, driving time and transfer charge between destination airport and center of city, and one-way and round-trip fares. The railroad schedules indicate, in addition to the data already mentioned, the name of the train, the seat and sleeping car accommodations provided, and one-way and round-trip fares for each class of accommodations.

With the Government Agencies

I.C.C. Staff Figures Post-War Rail Income

Study by Bureau of Transport Economics supplements its traffic survey

Depending upon what level of estimated national income is taken as a basis for the calculation, the Class I railroads will have a net railway operating income of from $508 million to $639 million this year, from $401 million to $648 million in 1947, and from $359 million to $640 million in 1948, according to a study which has been issued by the Interstate Commerce Commission's Bureau of Transport Economics and Statistics. The study, entitled "Post-War Earnings of Class I Railroads," is statement No. 467 of the bureau; and, like other such studies, it "has not been considered or adopted" by the commission.

Wage Rise Just in Time—As explained in the preface by Director W. H. S. Stevens of the bureau, the study is in the nature of a supplement to "Post-War Traffic Levels," which was published in 1944 (see *Railway Age* issues of October 28, 1944, page 665, and December 23, 1944, page 970). It was completed, however, just before the recent wage awards were made, and these are reflected only in a summary section, not being included in the text nor in the charts and tables in the balance of the report. The report was prepared by Spurgeon Bell, head transport economist, Leroy E. Peabody, principal transport economist, and H. S. Cannell, associate transport economist, all of the bureau's staff.

Whereas the "Post-War Traffic Levels" report assumed that the war with Japan would not end until 1946, and thus considered 1947, 1948, and 1949 as the first three post-war years, the present study uses the actual first three post-war years of 1946, 1947, and 1948, as indicated above. The net railway operating income estimates there noted are taken from the report's summary section which includes the adjustments for recent wage awards, although the revenue estimates do not include the recent rate increase.

Following the general plan of its predecessor, the present study first makes national income estimates and then uses them as a basis for the projections of the revenues and expenses of Class I roads. The national income estimates are again based on different assumptions as to the level of employment —assumption A contemplating "maximum employment," assumption B representative of a "conservative" view, and assumption C a "pessimistic" view. In terms of current prices assumption A turns up a 1946 national income of $160 billion, assumption B puts it at $150 billion, and assumption C at $139 billion. The respective estimates for 1946 net railway operating income are $639 million, $562 million, and $508 million, the estimates of gross being in turn $8,276 million, $7,656 million, and $7,024 million.

National Income Estimates — For 1947 the national income estimates are: Assumption A, $178 billion; assumption B $166 billion; assumption C, $150 billion. The 1947 estimates of net railway operating income are, in turn, $648 million, $555 million, and $401 million; while the respective estimates of gross are $9,053 million, $8,320 million, and $7,310 million. For 1948, assumption A indicates a national income of $189 billion and a net railway operating income of $640 million out of gross revenues of $9,471 million. Assumption B's estimates are, respectively, $176 billion, $519 million, and $8,639 million; while assumption C turns up a prospective national income of $154 billion and a net railway operating income of $359 million out of a gross of $7,315 million.

As to the remainder of the study, with its estimates of revenues and expenses based on 1945 data, the summary section says that these unrevised portions serve "to describe the methods used and the significance of the revisions made." Also, they contain "much historical data of value in the analysis of railroad revenues and expenses." Among such material is a chart showing the relationship between total operating revenues of

(Continued on page 149)

Reed Equity Savings Bill Passed by House

The House of Representatives on July 24 passed an amended version of the Reed bill, H. R. 5924, which would enable railroads undergoing reorganization to effect a readjustment of their financial structure without further proceedings under Section 77 of the Bankruptcy Act, if their properties during a period of seven years have provided annual earnings sufficient to pay fixed charges. The legislation now goes to a Senate-House conference committee, the House having paved the way for that procedure by making its bill an amendment in the form of a substitute to the Senate-approved Wheeler bill, S. 1253.

As noted in the *Railway Age* of April 20, page 834, the latter is an amplified successor to the so-called McLaughlin Act of 1942 which expired November 1, 1945; it sets up procedure for the voluntary modification of railroad financial structures, including provisions making such proceedings available to large roads already undergoing reorganization.

Favors Nickel Plate Control of Wheeling

I. C. C. examiner would not let the C. & O. profit, however; R. R. Young objects

Examiner Ralph R. Molster has recommended in a proposed report that Division 40 of the Interstate Commerce Commission conditionally approve a transaction whereby this road would acquire from the Chesapeake & Ohio 78,145 shares of Wheeling & Lake Erie common stock, thus building its holdings of the latter's voting shares to about 46.9 per cent of the total. One of the conditions suggested by the examiner would limit the selling price to the amount which the C. & O. paid for the stock—$4,168,388 or $53.34 per share as compared with $5,470,150 or $70 per share proposed in the application.

The proposed report's recommended finding is that, subject to the suggested conditions, the acquisition by the Nickel Plate and, through that road, by the C. & O. and the Alleghany Corporation, of control of the W. & L. E. and the Lorain & West Virginia would be "consistent with the public interest." The examiner proceeds to recommend further that the way be prepared for consummation of the transaction by release of W. & L. E. common from the deposit and voting trust agreement under which it has been held since July, 1929; but he would defer action on that part of the application which requests a like release for W. & L. E. preferred and prior-lien stock, both of which have voting rights along with the common.

Option Provisions — The July, 1929, voting-trust agreement was executed after the commission had found in the No. 21012 proceeding that the acquisition in 1927 of joint control of the Wheeling by the Baltimore & Ohio, New York Central, and Nickel Plate was in violation of the anti-trust laws. While that proceeding was under way, the B. & O. and N. Y. C. sold their Wheeling holdings to Alleghany; and there have since been transfers by sale of deposit certificates between Alleghany and Nickel Plate and between the latter and C. & O. Nickel Plate now holds certificates for 168,000 shares or 49.8 per cent of the common and 14,800 shares or 14.5 per cent of the preferred, which together comprise a voting interest of about 32.9 per cent. In addition to the 78,145 shares of common which it proposes to sell at this time, the C. & O. has certificates representing 1,658 shares of preferred and 115,369 shares of prior-lien stock. Nickel Plate may also purchase these under an option expiring December 4, 1946, the option being conditioned on purchase of the common, and

subject to the right of the C. & O. sell the prior-lien shares to Wheeling if the latter should desire to retire them, and the right of Wheeling to redeem the preferred.

As the examiner pointed out, transfer of all of these C. & O. holdings to Nickel Plate would give the latter 68 per cent of Wheeling's voting shares. Previously it had been noted in the report that two-thirds ownership is required for lease or merger transactions under Ohio laws. However, as noted above, only the proposed purchase of the common is here involved; and the examiner passed on with a warning to the commission that it should give "close scrutiny" to any future proposal to execute the option agreement for purchase of the preferred and prior-lien shares.

Sees Discrimination—With respect to the prior-lien shares, he pointed out that Nickel Plate, under the option, would be rebuying from the C. & O. for $115 per share stock which it sold to that road in 1941 for $96 a share after having acquired it from Alleghany for "around $190." In recommending that the commission limit the selling price of the Wheeling common to the amount of its cost to the C. & O., the examiner said that the proposed price of $70 per share "would not be just and reasonable because it favors one stockholder of the Nickel Plate in discrimination against all the rest."

"The shares were bought in the first place, with a view to their ownership by Nickel Plate," the proposed report went on. "While the Chesapeake & Ohio has held them, it has received a good return, in dividends, on its investment. Irrespective of prices at which small lots of the stock occasionally change hands on the public market, the Chesapeake & Ohio is not entitled to reap the proposed large profit of $1,301,762, and as to this the other Nickel Plate stockholders have just cause of complaint."

With respect to Nickel Plate-Wheeling relationships, the examiner found the two systems "essentially supplementary and complementary to each other" and "not competitive to any considerable degree." The record left him with the impression that "the prime factor in the present step toward inclusion of the Wheeling in the Chesapeake & Ohio system is its function as a channel, in conjunction with the Pittsburgh & West Virginia, from and to the Connellsville gateway." While no understanding with the Pennroad Corporation was disclosed, the proposed report continued to suggest that addition of the P. & W. V. to the system, "if approved by the commission, would seem to be a logical future development."

In addition to the above-mentioned modification of the selling price, the examiner would have the commission condition its approval of the transaction upon the inclusion of labor-protection provisions as set forth in the Interstate Commerce Act's section 5(2); and of provisions to assure the N. Y. C.'s continued access to certain Ohio coal fields. Also, he would require that no shares of Wheeling stock shall hereafter lie redeemed or called for redemption without commission approval. The proposed report is in Finance Docket No. 15181.

R. R. Young Comments—Upon release of the proposed report, Robert R. Young, chairman of the board of Alleghany and of the C. & O., issued the following statement:

"The examiner for the Interstate Commerce Commission today recommended that the Nickel Plate Road be authorized to purchase 78,145 shares of common stock of the Wheeling & Lake Erie Railway Company from the Chesapeake & Ohio, but at a price substantially less than that agreed upon by the parties. It is planned to file exceptions to the report and we hope that the proposal will be approved as made when the report is reviewed by the commission.

"Examiner Molster would require that the stock be sold to Nickel Plate at the price Chesapeake & Ohio paid for it years ago.

"However, when the major portion of the stock involved came on the market in July, 1943, Chesapeake & Ohio gave Nickel Plate the first opportunity to buy it at the then current price of around $52 a share. Nickel Plate tried to take advantage of this opportunity, but on September 28, 1943, the Interstate Commerce Commission decided that Nickel Plate did not have sufficient funds to purchase this stock although the directors thought that the purchase should be made and that the treasury was rich in cash. Thereupon, the Chesapeake & Ohio bought the stock and has carried the risk ever since. Had the stock depreciated in value the Chesapeake & Ohio stockholders would have borne the loss. Now that the purchase has proven to be a provident one, and Wheeling stock is selling around $70 per share, it would be unfair to deprive Chesapeake & Ohio stockholders of the profit.

"The examiner also imposes a condition upon his approval of the transaction that the little Wheeling & Lake Erie—which was not even a party to the proceedings and cannot benefit from them—give the great New York Central certain valuable bridge rights over the Wheeling tracks into rich coal reserves. It would appear to be unfair to Wheeling stockholders for Chesapeake & Ohio and Nickel Plate to go forward with the proposed sale, if to do so would impose upon Wheeling a burdensome condition.

Finally, it was our purpose to dissolve the Wheeling trust and thus terminate an arrangement—the reason for which has long since disappeared—which has so far cost the Chesapeake & Ohio and the Nickel Plate over $200,000 in useless fees for trustees. On this question the examiner leaves the matter dangling in the air by recommending that decision be deferred.

"We can find nothing constructive in any phase of Examiner Molster's findings although they would be very helpful to the Morgan-controlled New York Central."

Seven Proposals to Buy Pipe Lines Received by W. A. A.

The War Assets Administration announced last week that as of July 18 it had received seven proposals to purchase and three to lease the Big Inch and Little Big Inch pipe lines, which extend from Texas to the New York-Philadelphia area. The W. A. A. said that four of the seven prospective buyers expressed an intention to use the lines, in whole or in part, as oil carriers, while two contemplated the transmission of natural gas and the other contemplated the removal and relocation of one of the lines as an oil carrier.

The W. A. A. also reported that it has on record 12 letters of consideration or intent, several of which, it said, specify that a bid or proposal to purchase will be forthcoming by July 30, the closing date for acceptance of proposals on the lines. It added that it also had received five letters of consideration or intent to lease. The W. A. A. pointed out that while there was widespread interest in the use of the lines for transmission of natural gas, an increasing interest has been shown in acquiring the lines for petroleum service in accordance with the policy recommended to Congress by the Surplus Property Administration.

Grain at Shipside 14 Days Ahead of Schedule

Transportation of export grain to shipside for famine relief abroad is currently running about 14 days ahead of scheduled shipping requirements, according to the Office of Defense Transportation. The O. D. T. said that the June deliveries of 26,304 carloads exceeded the record established in January by "better than 6,000 carloads" and the previous record of August, 1945, by "more than 7,000 cars." It added that this June movement averaged daily deliveries of 879 carloads, exceeding the quota by 330 carloads a day. As a result, it was possible to pre-ship 19 July shiploads.

According to the O. D. T., the total July shipping program—which has been raised from 61 to 70½ ships—was in elevators at shipside or in transit by rail with the exception of one-half shipload on July 15. On that date, 37½ shiploads of the July grain quota had moved from the ports with a total of 24 ships yet to go on berth. The O. D. T. said that the record grain export movement was accomplished "in spite of steadily rising increases in box car loadings."

Money for Retirement Board and Mediation Board

Congressional action on the Labor-Federal Security Appropriation Bill, carrying fiscal 1947 funds for the Railroad Retirement Board, National Mediation Board and National Railroad Adjustment Board, was completed July 20 when the Senate adopted the conference report which had been approved by the House on the previous day. The final version's appropriations for the foregoing agencies are the same as those carried in the bill as it was reported from the House committee on appropriations—$300,995,000 for R. R. B., of which $298,233,000 is the appropriation to the Railroad Retirement Account in the Treasury, and $711,200 for N. M. B. and the Adjustment Board (see *Railway Age* of June 15, page 1195).

With respect to the Adjustment Board, however, the final version eliminated a House-approved provision which would have prohibited the payment of any funds provided for referees to any federal, state, or local government official "for any period of time during which such referee is receiving compensation for his employment in any such federal, state, or local government." The provision was eliminated by the Senate appropriations committee after

one of its subcommittees had heard presentations on the matter from Chairman H. J. Carr and Member R. F. Ray of the Adjustment Board and M. D. Lewis, assistant secretary of N. M. B. Generally they took the position that the "rider," as they called it, would "materially narrow the field from which we can select competent and proper persons" to serve as referees.

Money to Keep O. D. T. on Job Until April 30, 1947

President Truman on July 23 signed the recently-enacted Third Deficiency Appropriation Bill, H. R. 6885, which provides $525,000 to continue the Office of Defense Transportation until April 30, 1947. Congressional action on the measure was completed July 19 when the Senate and House adopted the conference report reconciling their differing versions.

There was no change in the O. D. T. item during the bill's journey through Congress, the $525,000 being the amount requested by Director J. Monroe Johnson and included in the measure when it was reported from the House committee on appropriations on June 26. Colonel Johnson's presentation had been made before a subcommittee of that committee, as noted in the *Railway Age* of June 29, page 1279. There was no O. D. T. presentation before the Senate appropriations subcommittee which held hearings on the measure.

Meanwhile the President had previously approved another deficiency appropriation bill with a provision modifying O. D. T.'s current appropriation to increase from $14,000 to $20,000 the limitation on the amount available for printing and binding. As noted in the *Railway Age* of May 25, page 1077, this modification will enable O. D. T. to publish a report on wartime transportation and its own activities in connection therewith.

Car Service Orders

Three new service orders have been issued by the Interstate Commerce Commission to set up separate permit arrangements governing the movement of lake-cargo coal moving to Great Lakes ports and tidewater coal moving through Hampton Roads ports and through ports in New York, New Jersey, Delaware, and Pennsylvania. Effective July 28, they supersede Service Order No. 92 which provided permit arrangements for all three areas and which has been canceled by Service Order 92-A.

The new orders are No. 550, which makes W. J. McGarry permit agent at Cleveland, Ohio, with jurisdiction over movements of coal to ports on Lakes Erie, Ontario, and Michigan; No. 551, which makes E. D. Enney permit agent at Norfolk, Va., with jurisdiction over movements of coal to be transshipped at Hampton Roads ports; and No. 552 which makes W. R. Godber permit agent at New York with jurisdiction over movements through ports in New York, New Jersey, Delaware, Pennsylvania, and Maryland. All three orders will expire December 15, unless otherwise modified.

Director Clinger of the I. C. C.'s Bureau of Service has issued General Permit No. 6 under Service Order No. 479, authorizing initial icing and one reicing in transit to full bunker capacity at a regular icing station en route on refrigerator cars loaded with potatoes in Alabama. The permit, the only one now outstanding under the order, will expire September 15, which is also the order's present expiration date.

Service Order No. 558, effective from July 25 until August 23 unless otherwise modified, authorizes railroads to substitute refrigerator cars for box cars in connection with the transportation of fruit and vegetable containers and box shooks from origins in Washington, Oregon and California to destinations in California. Under provisions of the order, the carriers may furnish not more than three RS type refrigerator cars in lieu of each box car ordered, subject to the carload minimum weight which would have applied if the shipment had been loaded in a box car of the size ordered.

House Passes Bill to Provide Air Parcel Post Service

The House, on July 16, passed without debate the bill to provide an air parcel post service which had been introduced on July 8 by Representative O'Brien, Democrat of Michigan, and reported favorably on the 11th from the committee on post office and post roads. The bill is H. R. 6970.

It fixes postage rates on mailable matter exceeding eight ounces in weight, but not more than 70 lb. nor measuring more than 100 in. in length and girth combined, "when carried by air and including transportation to and from air mail routes." The rates set forth in the bill range from 45 cents for the first lb. or fraction thereof over eight ounces plus four cents for each additional lb. or fraction thereof for delivery within the first or second postal zones to an eighth-zone rate of 75 cents for each lb. or fraction thereof in excess of eight ounces plus 55 cents for each additional lb.

The foregoing rates would be subject to mileage limitations, providing for additional charges on shipments moving more than 2,400 miles; and the postmaster general would be given discretion to impose surcharges on shipments of light weight in relation to size. He would also get discretion for one year to adjust the rates and the size, weight, and zone limits "in order to promote the service"—provided, however, "that the postage rates may not be adjusted upward in excess of the rates shown in this section."

O. D. T. Excludes Texas Areas from Grain Loading Territory

In order to concentrate a greater number of railway closed cars in the areas in which grain is now being harvested, the Office of Defense Transportation has excluded the western portions and border areas of Texas, in which no grain is grown, from the boundaries of the grain loading territory to which minimum loaded cars may be forwarded. This action, taken in General Permit ODT 1-4A, effective July 20, supersedes General Permit ODT 1-4 issued May 23.

The latter reduced loading requirements of closed cars from ten to five tons when such cars are destined to any point in the grain loading territory or forwarded in the direction of empty car movement to or toward the grain region. Under the new permit, the grain loading territory is defined as lying between a line drawn along the western shore of Lake Michigan to the eastern boundary of Illinois, thence south along the Illinois eastern boundary to Cairo, Ill. (exclusive of the Chicago switching district), thence south along the Mississippi river to New Orleans, La., and a line drawn along the western and southern boundaries of Montana to Warren, Mont., thence southeast along the route of the Burlington through Cheyenne, Wyo., Denver, Colo., Dalhart, Texas, Fort Worth, Houston and Galveston. The previous western boundary of the region proceeded southward from Denver, along the eastern boundary of New Mexico and directly south to the Mexican border.

O. D. T. said that loadings to the Texas area withdrawn from the boundaries of the grain region must now amount to 10 tons or more as required under its General Order No. 1.

Investigation of Bus Fares Launched by I. C. C.

The Interstate Commerce Commission has instituted upon its own motion an investigation into the reasonableness and lawfulness of fares, charges, rules and practices affecting the transportation in interstate commerce of passengers by Class I motor carriers of passengers. The proceeding is docketed as No. MC-C-550, and the order instituting it was dated July 1 and made public by the commission on July 24.

All Class I motor carriers of passengers subject to the Interstate Commerce Act are made respondents and hearings will be held "at such times and places as the commission may hereafter direct."

Scrap Shortage Acute—Salvage Committees Reactivated

Plans to obtain the aid of industry in the latest iron and steel scrap salvage "drive," which is aimed at bringing the country's steel furnaces up to capacity operations and increasing the flow of many peacetime products, have been announced by the Civilian Production Administration. Plans call for "key" industrialists to form active executive committees which will in turn blanket all industrial areas. These executive committees will be enlarged to meet particular needs and committee members will be charged with the responsibility of investigating every industrial plant in their particular communities or industries, to bring in the much needed scrap.

The urgent need for scrap (which normally accounts for 45 to 55 per cent of the materials entering into steelmaking) was highlighted by recent industry reports showing that leading industrial centers had less than two weeks' supply of scrap on hand while many individual steel units had only one to two days' supply left.

Edward W. Greb, former deputy chief of the Industrial Salvage Branch of the War Production Board's Salvage Division, has been loaned to C. P. A. by the city of Lake Worth, Fla., to "spark" the current salvage campaign. Industry representatives working with Mr. Greb are L.

D. Green, representing the Scrap Committee of the American Iron & Steel Institute and Edwin Barringer, president and secretary of the American Scrap Institute. C. P. A. expects to enlist the services of most of the 860 industrial leaders who headed the salvage drives during the war years.

The war-created salvage committees were terminated by C. P. A.'s predecessor, the W. P. B., on October 10, 1944, following a number of successful "drives" which netted the steel industry many millions of tons of scrap.

Through these committees each industry will be requested to perform the following six actions immediately: (1) Appoint an executive with authority to make decisions on scrap collection, (2) organize a salvage committee in every plant, (3) survey all plants and properties for untapped sources of scrap, (4) arrange to dispose immediately of all free and unquestionable items as scrap, (5) prepare a list of all idle and obsolete equipment, machines and parts, and (6) study all questionable, idle and obsolete items for future disposition.

Concentrating its first moves on the five best sources of scrap—railroads, the petroleum industry, mines, public utilities (electric, water, gas and large communication systems) and the automotive industry, C. P. A. hopes that this "rifle shot" approach will bring in large tonnages quickly.

Government Corporations Bill Approved by President

President Truman on July 20 signed the Government Corporations Appropriation Bill for the fiscal year ending June 30, 1947, congressional action on the measure, H. R. 6777, having been completed July 16 with adoption of the conference report reconciling differing House and Senate versions. The fiscal 1947 budget of the government-owned Inland Waterways Corporation is included in the bill, and Secretary of Commerce Wallace made his presentation on it before a House appropriations subcommittee the occasion for revealing his view that "now is the appropriate time" to offer I. W. C. for sale to private interests.

As noted in the *Railway Age* of June 22, page 1231, where Mr. Wallace's presentation was reported, the House appropriations committee's report on the bill included a recommendation against "early disposal" of the government barge lines. Neither Secretary Wallace nor any officer of I. W. C. appeared at the subsequent hearings before a Senate appropriations subcommittee. The only presentation there made with respect to the corporation was that of a Congress of Industrial Organizations representative who appeared to clear up some "misleading" statements in the House-hearing record on the matter of I. W. C. arrangements with unions representing its employees.

The government-corporation budgets included in the bill are those set up in the Corporation Supplement to the Budget, filed in May pursuant to the Government Corporation Control Act of 1945 which requires the inclusion of government corporation budgets as part of the annual federal budget. The bill does not actually appropriate the amounts budgeted, but embodies a series of restrictions disapproving specific expenditures proposed by the corporations. Subject to such restrictions, the submitted budgets are approved, the corporations retaining control of their revenues and expenses as before.

The I. W. C. submission was noted in the *Railway Age* of May 18, page 1032, and the limitations recommended by the House appropriations committee and passed by the House, as reported in the issue of June 22, remained without modification in the bill's final version. They stipulate that I. W. C. shall not spend for administrative expenses in fiscal 1947 more than $624,000 as compared with the $714,281 proposed. It is also stipulated that I. W. C. salaries, except those of vessel employees, shall be no higher than those of comparable civil service positions; and that the wage rates of the vessel employees shall be no higher than rates "prevailing in the maritime industry."

Would Now Charge Post Driving to Operating Expenses

Making their proposed report on further hearing in the No. 29140 proceeding, Examiners Howard Hosmer and Homer H. Kirby have recommended that the Interstate Commerce Commission now find that the railroads should be permitted to charge to operating expenses the cost of pressure-grouting and post-driving work to arrest water pockets and mud heaves in the roadbed. The charges would be made to account No. 202, Roadway Maintenance.

As noted in the *Railway Age* of April 7, 1945, page 638, the prior report by the commission's Division 1, dealing only with post driving, found that the cost of that work should be charged road investment account No. 3, Grading—except that the cost of removing the ballast and resurfacing was chargeable to operating expenses.

At the further hearing, the examiners said, they learned nothing new about post driving, and if the proceeding still embraced only that question they would have "no hesitancy in recommending that the original decision be affirmed." However, there was also brought in the matter of accounting for the alternative pressure-grouting method which treats water pockets by injecting into them a mixture of cement and water, usually including sand. And while the commission's Bureaus of Accounts and Valuation urged that grouting like post driving "is a structural improvement or addition to the railroad which is effective for a substantial number of years beyond the year in which the work is done," the examiners had difficulty in thus regarding as an additional facility the grout, "consisting so largely of masses of wet sand indefinite in shape and not differing materially in form, substance, or function from the original material in the subgrade."

Thus the proposed report's finding that the railroads should be permitted to charge the cost of grouting to operating expenses. The examiners would do the same for post driving because it is an alternative method of accomplishing the same result; and "it would be undesirable to require the cost of post driving to be charged to investment and at the same time to permit grouting expenses to be accounted for as repairs."

The proceeding which the prior report described as one involving "the fundamental distinction in accounting between capital expenditures and operating costs," was instituted by the commission in May, 1944, after the Texas & Pacific, the Texas & New Orleans, and the Louisiana & Arkansas had disputed contentions of the Bureaus of Accounts and Valuation that the cost of post driving should be charged to investment.

I. C. C. Staff Figures Post-War Rail Income

(Continued from page 146)

Class I roads and national income for the period from 1929 to 1948, the assumption B estimates of national income being used for the years 1946, 1947, and 1948.

"Two important conclusions," the report says, "may be at once drawn from the chart: (1) Railway operating revenues are a decreasing portion of national income, and this decline is expected to continue in the immediate post-war years; and (2) railway revenues in the immediate post-war years, on the basis of estimate B national income, will, despite the foregoing, exceed those of any year in the decade preceding the war. With the opening of the war, the ratio of railway operating revenues to national income increased almost to the level of the early 'Thirties. In the immediate post-war years this ratio is expected to be at a level approximating the smallest values reached during the period 1929 to 1943, yet the amount of business available to all transport agencies in this period should be sufficient to hold operating revenues somewhat above those of any one of the years 1931 to 1941."

Later on the report discusses deferred maintenance and the possible effect on the estimates of expenditures for that purpose. It is stated that the Bureau of Transport Economics and Statistics has made "some investigation" of deferred maintenance; and, while its work in that connection has not been completed, "preliminary estimates of the probable cost of this work total $386 million, of which expenditures of $19,300,000 would be postponed beyond three years." Results of "field studies" indicate that deferred maintenance in the post-war years "would be made up at approximately the following rates: First year, 50 per cent; second year, 30 per cent; third year, 15 per cent; with 5 per cent left to be made up after the three-year period."

Sees Railroad Lobby Blocking St. Lawrence Seaway

Senator Aiken, Republican of Vermont, a leading advocate of the proposed St. Lawrence seaway and power project, charged in a recent Senate speech that the "main opposition" to that project "is engendered by the eastern trunk-line railroads and power companies, both intimately connected with the higher echelons of finance in New York." He went on to assert that "evidence is piling up in judicial proceedings and in congressional hearings and elsewhere" to show that the Association of American Railroads is "the mouthpiece for certain eastern financial groups interested in the financing of certain trunk-line railroads."

Noting that both the A. A. R. and the Brotherhood of Railroad Trainmen are on record in opposition to the seaway, the

senator called this a "strange alliance," and wondered if the brotherhood thought it was serving "the best interests of the national welfare." He then digressed to discuss the presentations made before congressional committees in favor of the pending Bulwinkle bill to stay the operation of anti-trust laws with respect to carrier rate-making agreements approved by the Interstate Commerce Commission.

In those hearings, Mr. Aiken said, "it was clearly shown that it was a definite policy of the railroads, as carried out by the A. A. R., to get outside bodies to present the railroad point of view." He also noted that the B. of R. T. changed its position on the Bulwinkle bill and was now recorded in opposition. This led Mr. Aiken to suggest that the brotherhood may eventually come out for the St. Lawrence project.

Fifteen years ago, he said later on, the western railroads "were openly in favor of the development of the St. Lawrence seaway"; but "suddenly they became silent on this subject, and are now on record in opposition to it through their national railroad organization." Finally, the senator assailed the "campaign of misrepresentation" whereby St. Lawrence opponents "have sought to make it appear that all railroads, and particularly those in Vermont, are opposed to the project."

In the latter connection, Mr. Aiken referred to committee hearings on the pending resolution to approve the project where, he said, H. H. Powers, president of the Vermont State Railroad Association, made an opposition presentation, identifying it as one which rehearsed "the unanimous conclusions of all of the members of our association." To dispute this claim, the senator read excerpts from a letter wherein J. A. Rogers, general manager of the Central Vermont, had said that that road had not engaged in opposition to the project and would "continue to refrain from public comment or action on the subject." He also cited testimony presented at the congressional hearings by John D. Babbage, president of the Rutland, which is in the hands of trustees. The gist of the cited testimony was that Mr. Powers spoke for the trustees, who are members of the association, but not for the owners of the Rutland who are in favor of the seaway.

South Buffalo's Practices Are Condemned by Examiner

Making a second proposed report in the Ex Parte No. 128 investigation of the South Buffalo Railway Company, Examiner Ernest A. Burslem has recommended Interstate Commerce Commission findings to the effect that various practices of that Bethlehem Steel Corporation subsidiary and trunk lines connecting with it have been unlawful. The practices which the examiner would have the commission condemn involve mainly services rendered to Bethlehem's Lackawanna, N. Y., plants, but he would also disapprove as "double payment" the "overhead allowances" paid by the trunk lines to other industries for the spotting within their plants of cars handled in South Buffalo switching service, the charges for which are absorbed by the trunk lines.

Meanwhile Mr. Burslem found that the record "conclusively proves" that the South Buffalo is a common carrier as to Bethlehem traffic as well as that of the 30 other industries on its lines. In this connection, the proposed report rejected the contention of counsel assigned to the investigation by the commission who urged "that the South Buffalo in its relation to the steel company is not an independent common carrier but a mere plant facility, and, consequently is not entitled to have its connection terminal switching charges on steel-company traffic absorbed by connecting carriers under the line-haul rates."

Not a Plant Facility—With respect to application of the commodities clause, the examiner noted that the question of whether or not that provision of the Interstate Commerce Act [section 1(8)] was being violated was argued on brief; but he did not discuss the matter further, pointing out that it is now before the U. S. District Court for the Western District of New York in Civil Action No. 1464, *United States of America v. South Buffalo Railway Company, Bethlehem Steel Company, and Bethlehem Steel Corporation.*

The commission's investigation was instituted by its order of November 7, 1938, the object, as Examiner Burslem put it, being "to obtain information about the South Buffalo upon which the commission may determine whether, and to what extent, its operations and practices result in violations of the Interstate Commerce Act." Respondents in addition to the South Buffalo are "all common carriers by railroad serving the Buffalo switching district."

The present report is a document of 127 mimeographed sheets, plus appendices; and it sets forth 11 recommended findings, some of them with several parts. As stated above it is the second proposed report in the proceeding, the previous one, of which Examiner Burslem was co-author with Examiner W. J. Koebel, having been issued more than four years ago, as noted in the *Railway Age* of April 18, 1942, page 796. Thereafter the South Buffalo filed a petition for rehearing, which was granted, the present report being the result.

Finds Road Over-Equipped — South Buffalo practices which Examiner Burslem would have the commission condemn as unlawful include its ownership and operation of more locomotives, tracks, track scales, and lands within Bethlehem plants than the examiner finds necessary for its common-carrier services; intraplant switching and car-weighing services performed for Bethlehem without proper charges; and failure to publish in tariffs a "rule of thumb" providing for the collection or non-collection of switching charges for certain movements.

Also, the examiner asserted, as did the previous proposed report, that per diem records have been falsified by the South Buffalo and its connections to the advantage of the former; and that demurrage rules have been misapplied to the advantage of the Bethlehem plants. The South Buffalo and other respondents connecting with it were found to have permitted "unlawful" use of their cars for storage; and the trunk lines are further found to have permitted their own cars or cars in their possession to be diverted to "unlawful" use by the South Buffalo to handle its local intrastate and intraplant traffic.

The examiner recommended that the commission serve cease and desist orders on the respondents; and that it order the South Buffalo to make a special report as to the cost of furnishing its various services, the value of its common-carrier properties, and the revenue received from each service and facility furnished. The proposed report closes with a statement charging that South Buffalo annual reports have given the commission incorrect information with respect to the relationships between the railroad and its parent corporation. In making the charge, the report said:

"Considering the history of the South Buffalo since its capital stock was acquired by the predecessor of the Delaware corporation [Bethlehem], its purchase and maintenance free to the steel company of plant-service and general-yard tracks and scales in the Lackawanna plant, its close coordination of railroad services with the functions and production processes of the steel company, and its intimate business relations with the latter, for the South Buffalo to answer 'No' to the question in all its annual reports to the commission reading 'Are the tracks of the respondent operated primarily in the interest of any industrial, manufacturing, or other corporation, firm, or individual' is a misstatement. Manifestly, the South Buffalo is being operated primarily in the interest of the steel company, and is not permitted to exercise all the prerogatives of an independent common carrier."

Bethlehem in Control—Earlier in his report Examiner Burslem had referred to correspondence of record which evidenced "that no important step was taken, or change in policy made, by the South Buffalo without the knowledge, sanction, or approval of the steel company's general traffic manager. Even relatively unimportant matters were submitted for his opinion or advice." Other cited correspondence included that wherein the steel company's general manager complained that the Lackawanna plant's transportation costs were out of line with those of other Bethlehem plants. The reply of the South Buffalo's operating vice-president and general superintendent, as the examiner read it, described "some of the needless, plant-caused, operating difficulties and expenses incurred in consequence by the railroad." The South Buffalo officer then added that, so far as the railroad was concerned, "its charges are below cost."

Among other evidence reviewed in the proposed report was that which indicated to the examiner that the South Buffalo and other subsidiary railroads of Bethlehem "fared extremely well" in the matter of dividing emergency charges which were authorized for application on iron ore traffic during the period under review. "Thus," the report went on, "in the second half of 1936, on ex-lake iron ore from Buffalo to Sparrows Point (Md.), 410 miles over the Pennsylvania at rate of $1.94 per gross ton, the proportion of the emergency charge was 4.48 cents per gross ton, out of which those subsidiaries obtained 2.6 cents, or the South Buffalo 1.6 cents and the Patapsco & Back Rivers 1 cent, whereas the trunk lines retained only 1.88 cents despite the fact that all but relatively few miles of the entire hauls were over their lines. Un-

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to replace inadequate motive power

In wartime emergencies the railroads mobilized every locomotive that could be kept in service. But now inadequate motive power cannot cope with steadily increasing demands for service.

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der the general increase of 1938 the South Buffalo's share became 2 cents, due to disposition of the fractional cent, and is now included in its connection terminal switching charges."

Bill to Apply Commodities Clause to Pipe Lines

Representative Voorhis, Democrat of California, has introduced in the House a bill, H. R. 6972, "to require interstate pipe lines to operate as common carriers and to divorce their operations from shipper owners."

Crosser Security Bill Up in Senate

The Crosser bill embodying the Railway Labor Executives Association program for liberalizing the Railroad Retirement and Railroad Unemployment Insurance acts was about to be taken up in the Senate when this issue went to press. As noted in the *Railway Age* of July 20, page 100, the bill, H. R. 1362, which passed the House in its original form on July 3 was given expedited handling by the Senate committee on interstate commerce from which it was reported favorably without amendment on July 12.

Since that time, however, several senators have served notice of their intention to propose amendments. Among them is Senator Capehart, Republican of Indiana, one of the nine committee members opposing the favorable report, who is sponsoring the more moderate substitute bill which was reported from the House committee on interstate and foreign commerce but rejected by the House. As noted in the *Railway Age* of May 18, page 1027, the substitute would trim the proposed new pension benefits and reject all proposal to liberalize the Unemployment Insurance Act where the original version undertakes to add sickness and maternity benefits as well as to increase the amount and duration of unemployment benefits. Unless some amendment is adopted in the Senate, the bill will go direct to the President, thus affording no opportunity for its revision by a Senate-House conference committee.

Abandonments

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—This road has applied to the Interstate Commerce Commission for authority to abandon that portion of its line between Reno, Minn., and a point near Caledonia, 13.6 miles.

GULF, MOBILE & OHIO.—Upon petition of employee organizations, Division 4 of the Interstate Commerce Commission has extended for a further period of two years its reservation of jurisdiction with respect to the protection of employees who may be adversely affected by this road's abandonment authorized July 18, 1944, in the Finance Docket 14586 proceeding.

HAWAII CONSOLIDATED. — Division 4 of the Interstate Commerce Commission has authorized this road to abandon its entire line of 81 miles on the island of Hawaii.

Supply Trade

Howard D. Herbert has joined the Restfoam sales department of the **Hewitt Rubber Corporation** at the Buffalo, N. Y., headquarters.

J. G. McCarty has been appointed Pittsburgh, Pa., branch manager for the **Howe Scale Company** to succeed **H. J. Steidley,** who has retired.

J. E. Carroll has been appointed manager at Syracuse, N. Y., for the **Graybar Electric Company,** to succeed N. E. Olsen, whose appointment as manager at New Haven, Conn., was reported in last week's *Railway Age*.

The **H. K. Porter Company, Inc.,** has announced the purchase of the business of the **American Spiral Spring & Manufacturing Co.,** Pittsburgh, Pa. The new acquisition, together with the present Fort Pitt spring plant, will be operated as the American-Fort Pitt spring division.

John R. Craig, recently released from the Navy, has been appointed assistant to

John R. Craig

the vice-president in charge of sales for the **Taylor-Wharton Iron & Steel Co.,** Easton, Pa.

Stephen H. Newburn has been appointed manager of the **Air Reduction Sales Company's** Detroit, Mich., district, to succeed **G. J. Dekker,** recently elected vice-president of the Ohio Chemical & Manufacturing Co., an Air Reduction subsidiary. **A. C. Brown, Jr.,** succeeds Mr. Newburn as manager of the Cleveland, Ohio, district.

Harold C. Conners and **Harold R. Fosnot** have been appointed by the **Graver Tank & Manufacturing Co.** to head the Chicago area sales activities. Mr. Connors will handle steel plate sales and Mr. Fosnot will represent the Graver process equipment division, specializing in water conditioning equipment.

Wayne B. O'Neill, whose establishment of a railroad and automotive supply business in San Francisco, Calif., was reported in *Railway Age* of July 20, was born in 1907 in Salt Lake City, Utah, and began his career during summer vacations from high school by working in the Denver & Rio Grande Western shops at Denver, Colo. After attending the University of Colorado, Mr. O'Neill, in September, 1928, was appointed sales and service engineer of the Johns-Manville Sales Corporation's railroad

Wayne B. O'Neill

and transportation department, with headquarters in Seattle, Wash. He later was transferred to San Francisco in the same capacity.

G. K. Squier, formerly assistant manager of railway sales, the **Standard Oil Company (Indiana),** has been appointed manager of railway sales to succeed **J. Clay Lee,** who has retired after more than 40 years' service with the firm.

Mr. Lee left the Chicago, Milwaukee, St. Paul & Pacific in 1906 to join Standard of Indiana as a member of the traffic department in the Chicago general office. In 1919, he joined the Chicago sales division, where he had advanced to district superintendent when transferred to the same position at Peoria, Ill., in 1922. Later in 1922, he also became assistant manager of the Mankato, Minn., sales field and was transferred to the same position at, successively, Duluth, Minn., in 1926, Kansas City, Mo., in 1928 and Detroit, Mich., in 1931. Mr. Lee was made assistant manager of the railway sales department

G. K. Squier

in the general office in 1933 and promoted to manager in 1934.

Mr. Squier joined the company in 1923 as a member of the first sales training school at the Whiting, Ind., refinery. He became a lubricating engineer at Detroit

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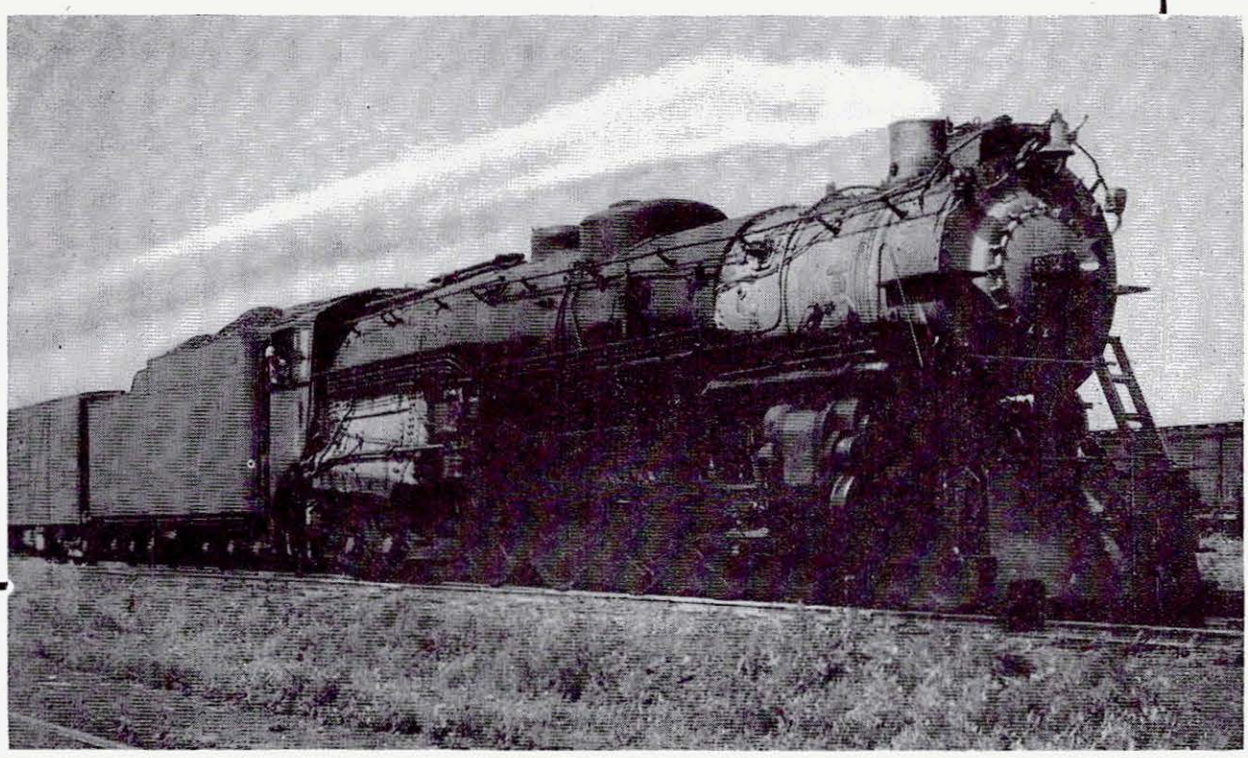
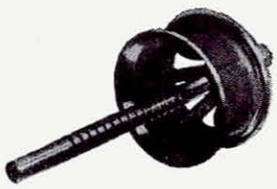


Offset the extra expense of high-speed operation by reducing transportation costs. Application of The Franklin System of Steam Distribution to existing locomotives offers the greatest possibilities for economy of operation.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

in 1924, and transferred to the general office in 1925. After serving with subsidiaries from 1930 to 1938, he returned to the parent company in charge of the automotive division of the sales technical service department in the general office, where he remained until 1945 when he was made assistant manager of railway sales.

R. B. McColl, president of the American Locomotive Company, has been appointed president of an American Locomotive subsidiary, the **Beaumont** (Texas) **Iron Works Company,** of which he also is chairman. Mr. McColl succeeds **A. I. Brainard,** who recently retired. **James F. Baldwin,** formerly associated with the Milton (Pa.) Manufacturing Company, has been appointed manager of the Beaumont Iron Works.

The new Danville, Ill., plant of the **Hyster Company** is operating under a production schedule on lift trucks and deliveries on the Hyster "40," the first 4,000-lb. capacity fork-type lift truck on pneumatic tires, have started.

Under the direct management of **Frank L. Ross,** vice-president in charge of all Eastern activities of the firm, the new

Frank L. Ross

plant is expected to be in full production by the fall. The operating personnel of the new plant includes **Jay Misenhimer,** factory manager; **Jim Woodley,** assistant factory manager, **William Morrow,** purchasing agent, and **Ray Smith,** office manager.

The **American Well Works,** Aurora, Ill., has purchased the **Atlas Foundry** located at 2300-24 Bloomingdale road, Chicago. The present management and organization of this foundry has been retained and the plant will be operated as a wholly-owned division of American Well. The production capacity will be increased as quickly as possible.

The **Carbone Corporation,** Boonton, N. J., manufacturer of carbon brushes, dry cells and signaling batteries, has announced the transfer of **E. C. Brehm** to be district manager of the Pacific Coast territory, with offices at 116 New Montgomery street, San Francisco, Calif. Mr. Brehm will supervise all sales and service in the Pacific Coast territory.

R. B. Lamkin, formerly with the signal department of the Pennsylvania, succeeds Mr. Brehm as district manager of the Chicago office, 53 West Jackson boulevard.

Robert W. Ward has been elected a vice-president and placed in charge of manufacturing for the **American Car & Foundry Co.** Mr. Ward has served the company in various capacities since 1909 and during the past 10 years he has served as

Robert W. Ward

district manager of the Huntington, W. Va., plant. Born in Washington, D. C., Mr. Ward attended schools in Ashland, Ky., and Ironton, Ohio. He entered the employ of American Car & Foundry at Huntington, immediately after graduation and served successively as secretary to the district manager, superintendent of stores and yards, superintendent of the car department, and later as general superintendent until 1937, when he became district manager. **W. E. Lunger** succeeds Mr. Ward as district manager of the Huntington plant.

Harold L. Kennedy, formerly Washington, D. C., district sales manager for the Mt. Vernon Car Manufacturing Company, has joined American Car & Foundry as sales agent in the Washington district sales office. A native of Savannah, Ga., Mr. Kennedy began his business career in the supply department of the Central of

Harold L. Kennedy

Georgia at Columbus, Ga. He later became assistant purchasing agent for the Fruit Growers Express Company.

The **Transport Products Corporation,** with headquarters at Louisville, Ky., has been organized to merge the Power Gates Company and the Signal division of the Peerless Manufacturing Company. The engineering and supervisory staffs, as well as all plant personnel of both organizations, have been retained by the Transport Products Corporation.

D. A. Cameron has been appointed assistant general sales manager of the **Parker Appliance Company,** Cleveland, Ohio. **Harvey E. Schroeder,** formerly district sales manager in Los Angeles, Calif., has been appointed manager of the newly-created Pacific division. In his new post, Mr. Schroeder succeeds **Paul Locklin** who has resigned as manager of the Los Angeles manufacturing division which, with the Pacific sales district, is being combined into a single West Coast organization. **J. E. Murphy** has been appointed manager of distributor sales.

The **Aro Equipment Corporation** has announced the appointment of nine new jobbers to handle Aro industrial pneumatic tools. The jobbers include the Roanoke Steel & Supply Company, Roanoke, Va., and the M. T. Gossett Company, Nashville, Tenn., under the supervision of the McEwen Cherry Company, local division managers in the territory; Lindholm-Berg Auto Parts, Hutchinson, Kan., under W. L. Etherton; the Motor Car Supply Company, Seattle, Wash., under the Burklyn Company; Rea & Co., Oakland, Calif., Thomas M. Aaron of Fresno, Calif., and the Industrial Sales Company, San Jose, Calif., under the H. E. Linney Company; and in Canada the Weber Hardware Company, Ltd., Kitchener, Ont., and the D. M. Duncan Machinery Company, Windsor, Ont., under David Hamilton.

Charles J. Hardy, chairman of the board of directors of the **American Car & Foundry Co.,** said in the company's annual report that "in the domestic field, the need of the railroads for additional equipment is still crying and to a large extent unsatisfied—and will probably so continue until the grievous burden of additional costs imposed upon them, directly or indirectly, by governmental action, can be compensated for by the increase of rates they are justly demanding."

In the foreign field, Mr. Hardy continued, while orders for equipment in substantial volume have already been placed with the company, "nevertheless there has not as yet developed an insistent demand for our products. The need for such exists but, understandably, it is likely that the placing of definitive orders to fill such need will be deferred until the intricate and difficult financial and other questions involved 'in the making of the peace' are nearer solution than they now are. At the close of the fiscal year there was on the books of your company and its subsidiaries, business representing upwards of one hundred and twenty-four millions in dollar volume, none of which business was in the category of 'war work.' On July 2, that amount had increased to more than one hundred thirty-five millions. This is due in part to additional business booked since the close of the year and in part to a carryover because of the inability to make deliveries under orders previously booked,

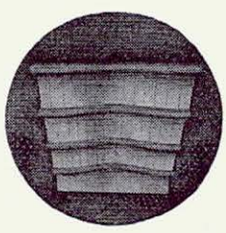
Give your locomotive a chance to do its best

By maintaining a complete brick arch in its firebox at all times, you give the locomotive a chance to develop its maximum steaming power.

And the heavier the load and higher the speed, the more important it becomes to secure maximum power from each ton of fuel.

The power-increasing and fuel-saving value of Security Sectional Arches has been demonstrated through long years of service on all types of locomotives.

HARBISON-WALKER REFRACTORIES CO.
Refractories Specialists



AMERICAN ARCH CO. INC.
60 East 42nd Street, New York 17, N. Y.
Locomotive Combustion Specialists

an inability caused by labor and other difficulties experienced by the suppliers of the material, raw and fabricated, needed by us for the completion of our product. That situation, however, is now in course of clearing—and with its clearing we shall be able to resume the normal flow of our finished product."

Net income of the company for the fiscal year ended on April 30, totaled $5,346,689, compared with $6,335,141 in the preceding fiscal year. Gross sales and car rentals, less discounts and allowances and after giving effect to adjustments to sales prices through renegotiation, aggregated $118,-113,552, compared with $199,755,179. The provision for federal income and excess profits taxes amounted to $3,186,860, compared with $17,411,174. Current assets at the end of the fiscal year were $80,979,574, compared with $131,601,695. Current liabilities were $25,928,674, compared with $90,054,666.

Equipment and Supplies

Car Institute Names Putnam Consulting Engineer

Palmer Cosslett Putnam has been appointed consulting engineer to the American Railway Car Institute, it has been announced by S. M. Felton, president. Mr. Putnam, who directed the design and development of the famous amphibian known as the DUKW or "Duck," as well as the "Weasel" and many other weapons of World War II, will make, in cooperation with the railroads, a comprehensive exploration covering, among other things, new materials and techniques developed during the war to ascertain possible applications for improving rail freight equipment.

In announcing the appointment, Mr. Felton said that the "railway car builders set

Bachrach

Palmer Cosslett Putnam

out to find a development engineer with an outstanding record for imagination and ability to conceive and execute practical solutions of difficult problems. We did not feel that familiarity with railway transportation was an essential and, as a matter of fact, believed that an individual from outside the industry might have fewer inhibitions than someone more familiar with our problems. We hope that car builders and railroads alike may benefit by the exploratory work which Mr. Putnam is undertaking."

During the war, Mr. Putnam served as an assistant to Dr. Vannevar Bush, director of the Office of Scientific Research and Development. In 1943, on a mission for the joint chiefs of staff to the various theaters of war, his task was that of developing the logistics and tactics of amphibious assault, and for a period he was on loan to, and on mission for, Admiral Louis Mountbatten, Supreme Allied Commander, Southeast Asia Command. Born in Canandaigua, N. Y., in 1900, he attended the Massachusetts Institute of Technology, where he received his bachelor's degree in 1923, and a master's degree in 1924. He invented and developed the Smith-Putnam wind turbine, and is a director and chief consultant of Windpower, Inc.

FREIGHT CARS

The CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for 100 70-ton covered hopper cars. This inquiry is in addition to that for 500 50-ton steel-sheathed box cars and 150 50-ton steel-underframed flat cars reported in the *Railway Age* for June 8.

The ILLINOIS CENTRAL is inquiring for 50 50-ton lightweight hopper cars. This inquiry is in addition to that for 1,000 50-ton box cars, 500 40-ton box cars and 400 50-ton steel hopper cars reported in the *Railway Age* for June 15.

The PACIFIC FRUIT EXPRESS, owned jointly by the Union Pacific and the Southern Pacific, is preparing to place an order for 3,000 additional refrigerator cars. This will make a total of 5,000 ordered by the company since January 1, including an order for 2,000 which was reported in the *Railway Age* of May 25.

The ERIE has ordered 500 50-ton box cars from the American Car & Foundry Company, 300 50-ton self-clearing hopper cars from the Greenville Steel Car Company and 200 70-ton drop-end gondola cars from the Bethlehem Steel Company. The inquiry for this equipment was reported in the *Railway Age* for June 29, page 1284.

SIGNALING

The INTERNATIONAL - GREAT NORTHERN has placed an order with the General Railway Signal Company, covering Type D color-light signals and other materials for absolute-permissive block signaling between Elkhart, Tex., and Crockett, a distance of approximately 36 miles.

The VICTORIA LUMBER COMPANY has ordered a 12-lever mechanical interlocker from the General Railway Signal Company. This machine will control 5 derails and 8 signals at a crossing of the lumber company's line with the Esquimalt & Nanaimo at Chemainus, B. C.

The BALTIMORE & OHIO has placed an order with the Union Switch & Signal Co. covering the installation of a car retarder system in the eastbound classification yard at Cumberland, Md., involving 586.75 rail feet of Model-31 electro-pneumatic car retarders, 19 direct-acting electro-pneumatic switch movements, the control machine relay cases and the relays and resistors for detector track circuits for the 19 switches.

The ILLINOIS CENTRAL has ordered materials from the General Railway Signal Company for the installation of an all-relay electric interlocking at Woodstock, Tenn. The control machine will be provided with a 12 by 17-in. panel equipped with 7 track indication lamps and 4 levers for the control of 3 switch machines and 7 signals. Type B plug-in relays, Model 5A switch machines, and plug-in switch circuit controllers will be used.

The MISSOURI PACIFIC has ordered materials from the General Railway Signal Company for the installation of an all-relay electric interlocking at Bald Knob, Ark. The 15 by 17-in. control machine panel will be equipped with 10 track indication lamps and 10 levers for the control of 6 switch machines, a switch lock, and 15 signals. Welded steel bungalows, Model-5D switch machines, Type-L dwarf signals, Type-F dwarf signals, and a spring switch lock are included in this order.

The GULF, MOBILE & OHIO has contracted with the General Railway Signal Company for materials to install Type K, 2-wire centralized traffic control on the 58 miles of single-track line between Murphysboro, Ill., and Davis. A 54-in. control machine, to be installed at Murphysboro, will be equipped with 32 track indication lamps and 31 levers for the control of 15 switch machines and 62 signals. Welded steel bungalows, Type SA signals, Model 5D switch machines, Type B plug-in relays, and Model 9A switch locks will be utilized in this installation.

The GEORGIA has placed an order with the Union Switch & Signal Company covering the necessary materials for the installation of automatic block signaling on its double-track line between Hurt street and Central avenue, Atlanta, Ga., involving Style H-2 searchlight dwarf signals, U-5 switch circuit controllers, relays, housings, etc. Polarized track circuits are being installed, fed by primary battery, with the signals approach cleared and approach lighted, using series track relays. The regular signal forces of the railroad will handle the field installation work.

The UNION PACIFIC has placed an order with the Union Switch & Signal Company covering the material required for an installation of centralized traffic control between Huntington, Ore., and La Grande, 100 miles of single-track territory. A Style C control machine will be installed at La Grande to operate the entire section, with part of the territory to be controlled by coded carrier, and the system, generally, is to include reversible coded track circuits requiring a minimum amount of line wire. Besides the control machine the order includes the required coding and carrier equipment, Style H-2 searchlight high and dwarf home signals, Style P-5 color-light intermediate signals, M-22A electric switch movements, Style SL-6A electric switch locks, motor car indicators, relays, rectifiers, transformers and housings. The installation work will be handled by the railroad.

News Department continued on next left-hand page

The American Multiple-valve Throttle

...popular the World Over

AMERICAN THROTTLE COMPANY
INCORPORATED
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122 S. Michigan Avenue, Chicago 3, Ill.

Financial

BALTIMORE & OHIO.—*New Directors.*—Richard Harte, president of the Ames Baldwin Wyoming Company of Parkersburg, W. Va., and James D. Cunningham, president of the Republic Flow Meters Company, Chicago, have been elected directors of the Baltimore & Ohio. Mr. Harte succeeds John J. Cornwell, resigned, and Mr. Cunningham succeeds the late Albert A. Sprague.

CENTRAL OF NEW JERSEY.—*Stock.*—Division 4 of the Interstate Commerce Commission has authorized the Central of Pennsylvania, which the C. of N. J. controls through ownership of stock, to issue 22,500 shares of capital stock at $100 par value, of which 15,000 shares will be exchanged for property to be leased from the C. of N. J. The remaining 7,500 shares will be sold at par to the C. of N. J., the proceeds of the sale to be applied toward working capital needed by the C. of P. to operate the properties it proposes to lease. (See *Railway Age,* July 13, page 74.)

CHICAGO, ROCK ISLAND & PACIFIC.—*Reorganization.*—Division 4 of the Interstate Commerce Commission has set September 24 as the date of further hearing at Washington, D. C., in connection with the reorganization of this road under Section 77 of the Bankruptcy Act. The hearing is to be held before Commissioner Porter, Examiner H. H. Wilkinson and Roger T. Boyden, chief, Reorganization Section, Bureau of Finance. As noted in *Railway Age,* July 6, page 19, the plan of reorganization previously approved by the commission has been referred back to it by Judge Michael L. Igoe of the U. S. District Court for the Northern District of Illinois.

UNION.—*Refunding.*—This road has applied to the Interstate Commerce Commission for authority to issue $7,900,000 of Series A first and refunding mortgage bonds, the proceeds of which will be applied toward the retirement of $2,000,000 of 5 per cent first mortgage gold bonds, and $5,900,000 of 6 per cent gold debentures, both due September 1. The proposed issue, to be dated September 1, will be due September 1, 1986. The rate of interest will be determined by competitive bidding.

Average Prices Stocks and Bonds

	July 23	Last week	Last year
Average price of 20 representative railway stocks	59.88	62.35	54.79
Average price of 20 representative railway bonds	97.41	97.51	97.97

Dividends Declared

Atlantic & West Point.—Common, $2.00, payable August 1 to holders of record July 25.

Atlantic Coast Line.—Quarterly, $1.00, payable September 12 to holders of record August 15.

Erie & Kalamazoo.—Semi-annually, $1.50, payable August 1 to holders of record July 26.

International of Central America. — 5% preferred, accumulative, $1.25, payable August 15 to holders of record August 5.

Louisville Henderson & St. Louis.—5% noncumulative, preferred, semi-annually, $2.50, payable August 15 to holders of record August 1.

Louisville & Nashville.—Quarterly, 88c, payable September 12 to holders of record September 1.

Saratoga & Schenectady.—$2.00, payable July 15 to holders of record July 1.

United New Jersey Railroad & Canal.—Quarterly, $2.50, payable October 10 to holders of record September 20.

Western of Alabama.—Common, $2.50, payable August 1 to holders of record July 25.

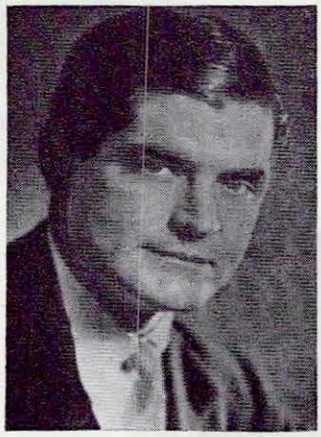
Railway Officers

EXECUTIVE

Fred W. Okie, general manager, Western lines, of the Southern, with headquarters at Cincinnati, Ohio, will leave this position to become president of the Union (Pittsburgh, Pa.) on August 1.

George H. Smith, vice-president of the Chicago & Eastern Illinois, at Chicago, has been elected executive vice-president with the same headquarters, a newly created position.

C. R. Hook, Jr., whose appointment as assistant to president for personnel of the Chesapeake & Ohio, the Pere Marquette, and the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, was announced in the July 20 issue of *Railway Age,* was born in 1904. During his career in the field of industrial and labor relations he has served as a member of the United States Mission of Labor Experts in 1943, as an industry member of the Na-



C. R. Hook, Jr.

tional War Labor Board, as a management advisor for the Training Within Industry Division of the War Manpower Commission, and, more recently, as a member of a 7-man Advisory Council to assist the War Department General Staff on the personnel phases of the current major reorganization of the War Department. Mr. Hook was co-author with Lee H. Hill of "Management at the Bargaining Table," a critical study of industry's approach to labor problems, published in 1944. He is a member of the Planning Council Personnel division of the American Management Association, a director of the American Arbitration Association, and since 1944 has served on the Committee on Labor Negotiations of the National Association of Manufacturers, becoming chairman of this group in June. Mr. Hook was assistant to the general manager of the Rustless Iron and Steel division of the American Rolling Mill Company, with headquarters at Baltimore, Md., until accepting his new post, effective July 15. He will be responsible for the development of a broad personnel program designed to modernize the affiliated railroads' procedure and to introduce youthful new executive talent into railroading.

FINANCIAL, LEGAL AND ACCOUNTING

Casselberry D. Dutschke, whose promotion to auditor of passenger accounts of the Louisville & Nashville, with headquarters at Louisville, Ky., was reported in the

Casselberry D. Dutschke

Railway Age of July 13, was born at Louisville. He entered railway service with the L. & N. in June, 1916, in the office of the auditor of passenger accounts, subsequently holding various positions until February 1, 1941, when he was advanced to head clerk. On April 1, 1945, Mr. Dutschke was promoted to chief clerk in the office of the auditor of passenger accounts, the position he held at the time of his new appointment.

James E. Grigsby, assistant attorney of the Chicago, Rock Island & Pacific at Oklahoma City, Okla., has been promoted to general attorney for Oklahoma, with the same headquarters, succeeding **W. R. Bleakmore,** who has retired.

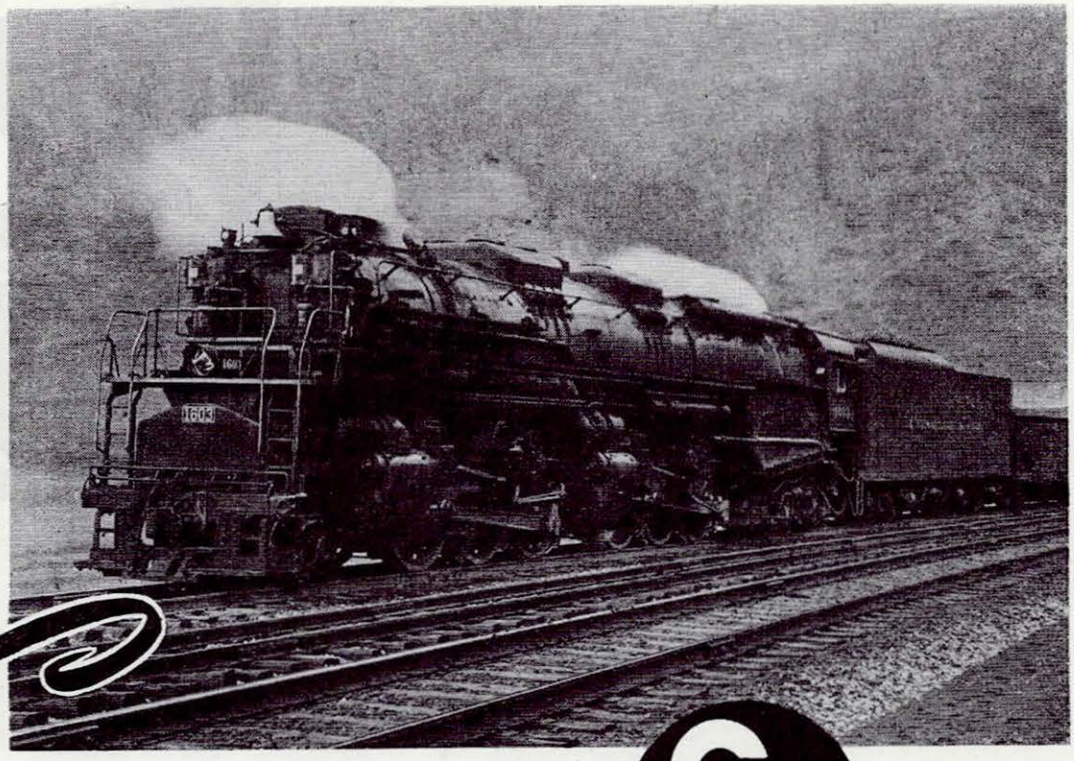
A. B. Olson, cashier-paymaster of the Chicago Union Station Company at Chicago, has been promoted to auditor and secretary, with the same headquarters, succeeding **J. W. Besch,** whose death on July 8 was reported in the *Railway Age* of July 13.

Edward Price, assistant treasurer of the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, Minn., has been promoted to treasurer, with the same headquarters, succeeding **Ernest Melander,** whose death at St. Paul was reported in the *Railway Age* of June 15. **J. M. Brightman,** general accountant, has been advanced to assistant treasurer, with headquarters as before at St. Paul, replacing Mr. Price.

OPERATING

G. R. Branch, who has been on leave of absence from the Chicago, Rock Island & Pacific to serve as a colonel of the 725th Railway Operating Battalion, has returned to his position of superintendent of the Western division, with headquarters at Fairbury, Neb. He replaces **R. H. Spicer,** who has been transferred to the Des Moines division at Des Moines, Iowa, where he succeeds **F. L. Campion,** who in turn has

News Department continued on second left-hand page



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AMONG VETERAN HSGI USERS

EVERYBODY knows the Chesapeake and Ohio. Even far beyond its own South and Middle West territory, this great road has a reputation for dependable service. Like most Class I railroads, the Chesapeake and Ohio is a long-time user of Hunt-Spiller Gun Iron for wear resisting parts of steam locomotives. The fact that this association between the C. & O. and HSGI has endured for more than a generation is proof of the high quality of Hunt-Spiller Gun Iron.

HUNT SPILLER GUN IRON HSGI *AIR FURNACE PROCESS*

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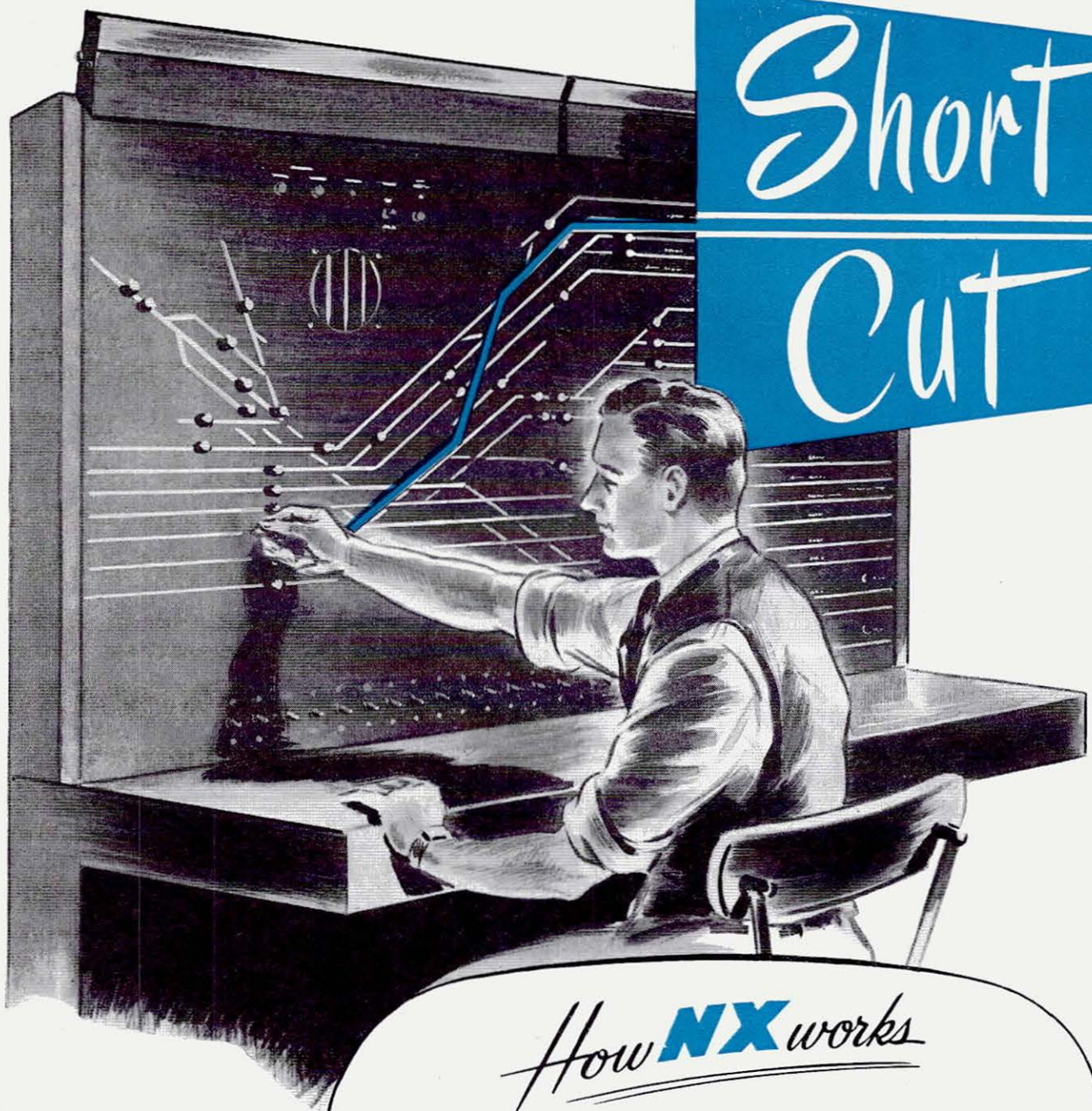
Pistons or Piston Bull Rings	Shoes and Wedges	
Valve Bushings	Floating Rod Bushings	
Valve Packing Rings	Light Weight Valves	Cylinder Snap Rings
Valve Bull Rings	Cylinder Liners and Pistons for Diesel Service	Valve Rings, All Shapes

Short Cut



How NX works

The operator makes only two finger-tip moves to set up a route. No time is lost in breaking the route down into a complex series of lever moves. He merely manipulates one eNtrance knob and one eXit button. NX does the rest automatically — throws switches, clears signals, and shows the train's progress by lights on the control board. If the best route is not available NX *automatically* selects the next best route.

to higher routing efficiency

NX ELECTRIC INTERLOCKING

This modern G-R-S system provides a simple, direct method for expediting train movements and greatly reducing tie-ups and delays in all types of terminals. It enables a single operator to handle many routes easily and with maximum coordination even under peak traffic conditions. And — the more complex your terminal — the busier it is — the greater are the benefits you derive from NX.

With NX, it is easier than ever to merge two or more interlocking plants into an efficient unit. Savings resulting from such consolidations can range as high as 55 per cent.

With NX, you can cut maintenance costs, too — for on the control machine there are only lamps to be replaced, and there is hardly any wear on the other parts.

With NX, the chances of errors that cause train delays and confusion are reduced to a minimum.

When modernizing an interlocking plant, it is sound economics to install NX. This money-, time-, and effort-saving system can be applied to any type of interlocking. Why not let G-R-S engineers tell you what benefits you may expect from this *new idea* in train direction?

been appointed assistant division superintendent, with headquarters at Estherville, Iowa.

J. E. Moran, chief dispatcher of the Grand Trunk Western at Battle Creek, Mich., has been promoted to trainmaster, with the same headquarters.

Alton D. Schadt, office assistant, general manager's office, of the Bessemer & Lake Erie, with headquarters at Pittsburgh, Pa., has been appointed assistant to general manager there.

J. B. Hilton, who has been engaged in special work for the St. Louis-San Francisco at St. Louis, Mo., has returned to his former position of assistant to the general manager, with headquarters at Springfield, Mo.

G. H. Pescud, whose promotion to general superintendent of communications, western lines, of the Canadian Pacific, with headquarters at Winnipeg, Man., was reported in the *Railway Age* of June 8, was born in the county of Surrey, England, on February 1, 1909. He entered railroad serv-

G. H. Pescud

ice on March 15, 1923, as a messenger on the Canadian Pacific, and subsequently served as agent, operator, and night chief operator until October, 1937, when he was appointed chief clerk to the general manager, communications, with headquarters at Montreal, Que. On July 1, 1943, Mr. Pescud was promoted to superintendent of traffic, western lines, at Winnipeg, and on September 1, 1944, he was appointed superintendent of communications at Moose Jaw, Sask., the position he held at the time of his recent promotion.

R. McCown, inspector of transportation of the Missouri Pacific at Houston, Tex., has been promoted to assistant superintendent of safety, with the same headquarters, succeeding **J. P. LaBarge,** who has retired.

U. J. Mangan, sleeping and dining car superintendent of the Canadian National at Edmonton, Alta., has been appointed acting general superintendent of sleeping and dining cars, Western region, with headquarters at Winnepeg, Man., succeeding **W. A. McDonald,** who has been granted a leave of absence due to illness. **H. Coley,** assistant superintendent of sleeping and dining cars at Edmonton, has been advanced to superintendent of sleeping and dining cars, with the same headquarters, replacing Mr. Mangan.

John T. Moon, superintendent of the Southern at Greensboro, N. C., has been appointed general manager, Western lines, at Cincinnati, Ohio, to be effective August 1. Mr. Moon succeeds **Fred W. Okie,** who will leave the service of the Southern to become president of the Union Railroad Company at Pittsburgh, Pa., on that date. An account of Mr. Okie's career and a photograph appeared in these columns in the March 16 issue of *Railway Age,* in connection with his promotion to general manager, Western lines. Also on August 1, **Earl L. Keister,** superintendent at Louisville, Ky., will succeed Mr. Moon at Greensboro, while **Durland Clark,** superintendent at Winston-Salem, N. C., will transfer to Louisville, succeeding Mr. Keister. **E. Rogers Oliver, Jr.,** assistant superintendent at Sheffield, Ala., will succeed Mr. Clark as superintendent at Winston-Salem, and **Frank S. Worthington,** trainmaster at Danville, Va., will succeed Mr. Oliver.

TRAFFIC

Marion McN. Porter has been appointed division freight agent of the Central of Georgia, with headquarters at Savannah, Ga., succeeding **J. R. Stanfield,** who has resigned.

Richard H. Clare, whose appointment as general passenger agent of the Pennsylvania, with headquarters at Washington, D. C., was announced in the July 6 issue of *Railway Age,* was born in Brooklyn, N. Y., on July 16, 1901, and his first service with the Pennsylvania was during the summers of 1917 and 1918. He began permanent employment in August, 1922, as a clerk at Pittsburgh, Pa., becoming ticket

Richard H. Clare

seller there in September of that year. After holding various positions in the division and general passenger offices subsequently at Pittsburgh, Mr. Clare was appointed New England passenger agent at Boston, Mass., in October, 1938. In July, 1942, he went to St. Louis, Mo., as division passenger agent, and advanced to assistant general passenger agent at Philadelphia, Pa., in June, 1943. Mr. Clare was granted a leave of absence to accept a position with the Office of Defense Transportation at Washington, D. C., where he served from July, 1944, until March, 1945. He then returned to the Pennsylvania in his former capacity, that of assistant general passenger agent, the post he held at the time of his recent promotion, effective July 1.

Hugh W. Lynch, formerly with the International Paper Company, has been appointed traffic manager of the Jay Street Connecting Railroad, with headquarters at Brooklyn, N. Y., succeeding **Harry G. Weitkamp,** who has been assigned to other duties.

Charles F. Bigelow, whose appointment as general passenger agent of the Southern, with headquarters at Charlotte, N. C., was announced in the July 16 issue of *Railway Age,* was born on November 22, 1884, at Canton, Ohio, and entered railroading in 1903 as a ticket stock clerk for the Southern at Cincinnati, Ohio, where he was advanced to excursion agent in 1906. He went to Atlanta, Ga., as southeastern passenger agent in 1907, then to

Charles F. Bigelow

Jacksonville, Fla., as Florida passenger agent in 1913, where he became traveling passenger agent in January, 1917, transferring to Cincinnati in May of the same year. In 1918, Mr. Bigelow was sent to Chattanooga, Tenn., to serve in the passenger traffic service department, after which he served at various points as district and division passenger agent from 1920 until 1934, when he was named New England passenger agent at Boston, Mass. Mr. Bigelow retired on account of illness in 1936, but returned to the Southern in 1938 as city passenger agent at Atlanta. In 1939, he became district passenger agent at Miami, Fla., and then in 1942, assistant general passenger agent at Asheville, N. C., maintaining the latter post until his recent advancement, which became effective July 16.

C. L. Foster, traveling passenger agent for the Southern, with headquarters at Atlanta, Ga., has been appointed district passenger agent there, succeeding **R. H. Hamilton,** whose appointment as assistant general passenger agent with the same headquarters was announced in the July 20 issue of *Railway Age.*

Alastair Campbell, district freight agent of the Canadian National at Victoria,

News Department continued on next left-hand page

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B. C., has been promoted to division freight agent, with headquarters at Winnepeg, Man. **J. R. Brown,** freight traffic representative at Port Arthur, Ont., has been advanced to district freight agent, with the same headquarters, succeeding **J. J. Raleigh,** who has been transferred to Victoria, replacing Mr. Campbell.

Edward J. Zschirpe, John H. Norwood, and **Arthur E. Baylis** have been appointed assistant general freight traffic managers of the New York Central, with headquarters at New York. Until these appointments became effective on July 17, Mr. Zschirpe was assistant to vice-president, freight traffic at New York; Mr. Norwood was assistant freight traffic manager at Cincinnati, Ohio; and Mr. Baylis served as foreign freight traffic manager at New York; he will continue general supervision over that department.

ENGINEERING & SIGNALING

Prentiss S. Hughel, whose promotion to superintendent of telegraph of the New York Central System, with headquarters at Detroit, Mich., was reported in the

Prentiss S. Hughel

Railway Age of July 13, was born at LeRoy, Ill., on August 3, 1898. He entered railway service on May 1, 1919, as a draftsman of the Cleveland, Cincinnati, Chicago & St. Louis (part of the New York Central) with headquarters at Indianapolis, Ind., and one year later he was appointed chief clerk to the superintendent of telegraph, with the same headquarters. On November 1, 1931, Mr. Hughel was transferred to the New York Central in Detroit, and on February 1, 1942, he was advanced to assistant superintendent of telegraph, with the same headquarters, the position he held at the time of his new appointment.

E. C. Hoyer, Jr., has been appointed engineer of buildings for the Chesapeake & Ohio, with headquarters at Richmond, Va.

S. E. Noble, whose appointment as assistant chief engineer, communications and signals, of the Chicago & North Western, with headquarters at Chicago, was reported in the *Railway Age* of July 20, was born on May 22, 1888, at West Pittston, Pa., and was graduated from the electrical engineering department of Pennsylvania State college in 1915. During the summer vacation preceding his graduation he entered railway service as a helper in a signal construction gang on the Delaware, Lackawanna & Western. After completing his

S. E. Noble

college course he returned to the Lackawanna on June 15, 1915, as an electrician's helper at Scranton, Pa. In December, 1915, he was transferred to the signal department on the Scranton division as an assistant wireman, later becoming signal wireman, which position he held to September, 1917, when he left the Lackawanna to enter the service of the Chicago & North Western as a signal draftsman in the office of the signal engineer at Chicago. Mr. Noble was appointed signal estimator in April, 1921, and after serving in this capacity for one year, he was appointed chief draftsman. In October, 1924, he was promoted to assistant engineer in the signal department, and held this position until December, 1926, when he was appointed general signal inspector. On January 1, 1928, he was appointed assistant signal engineer, holding this position until October 20, 1937, when he was appointed signal engineer. On November 1, 1939, Mr. Noble was appointed superintendent of telegraph and signals, coincident with the combination of the telegraph and signal departments on the North-Western, and he held that position until his recent appointment.

P. O. Gladhill has been appointed assistant signal engineer of the Central district of the Chicago & North Western, with headquarters at Chicago. **L. H. Graf** has been appointed junior assistant signal engineer of the Central district, with headquarters at Chicago. **K. Chamberlain** has been appointed assistant signal engineer of the Illinois district, with headquarters at West Chicago, Ill. **C. C. Mansfield** has been appointed assistant signal engineer of the Western district, at Boone, Iowa. **A. A. Meyer** has been appointed junior assistant signal engineer of the Western district, with headquarters at Sioux City, Iowa. **E. F. Shaw** has been advanced to assistant signal engineer of the Upper Northern district, with headquarters at Green Bay, Wis., and **C. W. Biggers** has been appointed assistant signal engineer of the Lower Northern district, with headquarters at Milwaukee, Wis. **S. P. Searle** has been appointed assistant signal engineer of the Northwestern district, at Madison, Wis. **F. W. Bleier** has been advanced to assistant signal engineer of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., and **A. F. Geske** has been advanced to junior assistant signal engineer of the Chicago, St. Paul, Minneapolis & Omaha, at Eau Claire, Wis.

W. E. Ross, assistant engineer on the Chicago, Milwaukee, St. Paul & Pacific, at Bensenville, Ill., has been appointed division engineer of the Idaho division, with headquarters at Spokane, Wash., replacing **E. H. Johnson,** who becomes budget engineer at Chicago.

PURCHASES AND STORES

William E. Redus, store foreman of the Southern Pacific at San Antonio, Tex., has been promoted to division storekeeper, with the same headquarters, succeeding **W. B. Shine,** deceased.

J. E. Seiler, storekeeper for the Southern, with headquarters at Birmingham, Ala., has been appointed division storekeeper, with headquarters at Richmond, Va., succeeding the late **B. F. Page.**

OBITUARY

John R. McDowell, who retired in 1945 as general agent of the Delaware, Lackawanna & Western, at Milwaukee, Wis., died in a Milwaukee hospital on July 15.

Alvin F. Sortwell, president of the Barre & Chelsea at Montpelier, Vt., died on July 17 at the Massachusetts General hospital at Boston, Mass., aged 55.

Charles S. Fay, who retired in 1934 as vice-president and general manager of the Southern Pacific Lines in Texas and Louisiana, died at his home near Lake Charles, La., recently.

Thomas C. Straw, who retired last December as supervisor of safety of the Chicago, Rock Island & Pacific, with headquarters at Kansas City, Mo., died recently aboard a Rock Island train near Kansas City.

Harry D. Purviance, who retired in 1944 as superintendent of the Northern Iowa division of the Chicago & North Western, with headquarters at Mason City, Iowa, died recently at his home in Grand View, Ark.

Thomas F. P. Paradise, who retired as treasurer of the New York, New Haven & Hartford in 1938, after 57 years' service in the treasurer's office of the New Haven, died at his home in Branford, Cann., on July 19, aged 84.

Arthur B. Smith, former passenger traffic manager of the North Pacific, died on July 15 at his home in Southwest Harbor, Me., at the age of 84. Mr. Smith's career in railroading included service as an engineer with the surveying party which laid out the Burlington & Missouri River (now part of the Chicago, Burlington & Quincy), of which he eventually became assistant general passenger agent. Later he was general passenger agent of the New York, New Haven & Hartford, and in 1917 he became passenger traffic manager of the Northern Pacific, the post from which he retired in 1928.

Table of Freight Operating Statistics appears on the next left-hand page

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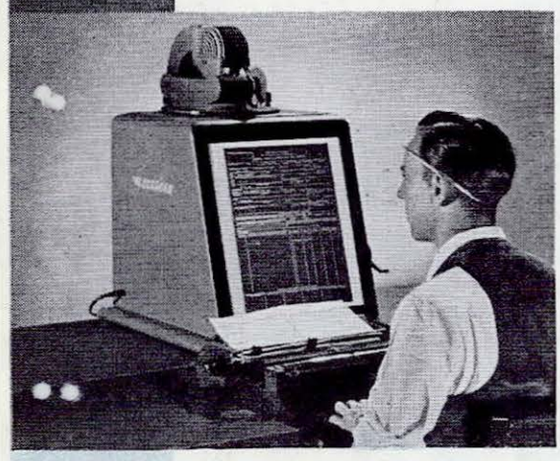

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Freight Operating Statistics of Large Steam Railways—Selected

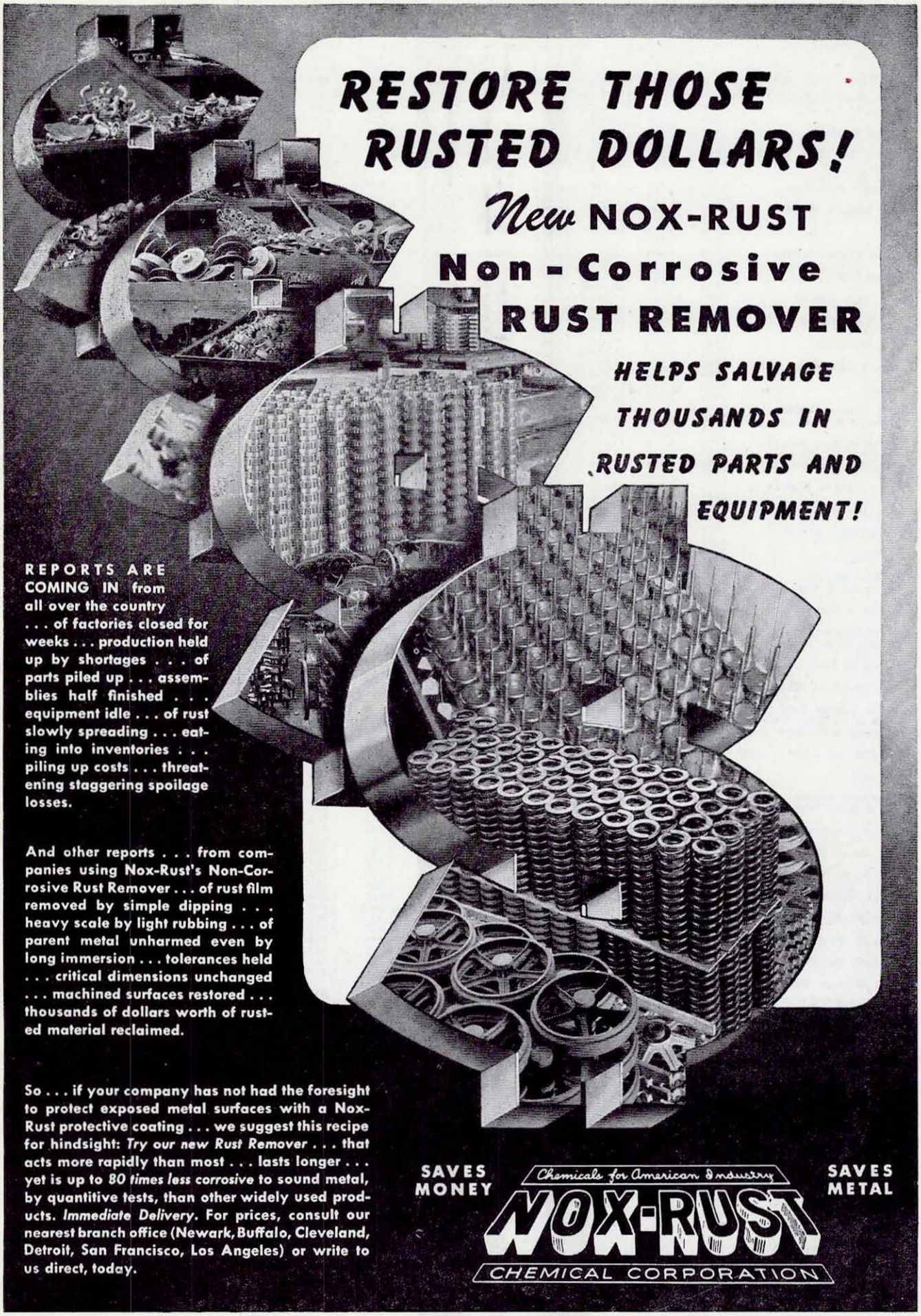
Region, road, and year		Miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (*thousands*)	Car-miles: Per cent loaded	Ton-miles (*thousands*): Gross excl. locos. & tenders	Ton-miles (*thousands*): Net-rev. and non-rev.	Road locos. on line: Serviceable: Unstored	Road locos. on line: Serviceable: Stored	Road locos. on line: B. O.	Road locos. on line: Per cent B. O
New England Region:													
Boston & Albany	1946	362	148,095	161,335	19,093	3,342	64.0	204,429	78,596	59	7	20	23.3
	1945	362	179,391	206,489	34,093	4,432	60.9	298,395	122,891	71	..	20	22.0
Boston & Maine	1946	1,752	319,644	331,910	13,092	12,041	72.6	706,386	298,104	114	5	17	12.5
	1945	1,777	365,303	391,517	24,597	15,044	68.4	968,466	434,893	143	4	18	10.9
N. Y., New H. & Hartf.†	1946	1,820	378,831	549,188	42,343	14,844	72.7	830,378	350,594	185	24	62	21.4
	1945	1,815	487,087	658,587	53,265	19,161	69.6	1,161,813	515,844	220	16	49	17.3
Great Lakes Region:													
Delaware & Hudson	1946	846	249,894	293,449	28,429	10,246	64.8	690,671	329,923	117	77	32	14.2
	1945	846	316,810	419,407	46,772	14,998	66.1	1,070,629	557,662	134	43	33	15.7
Del., Lack. & Western	1946	971	315,328	355,140	41,428	13,342	69.0	846,128	371,102	119	26	25	14.7
	1945	971	384,792	459,381	76,191	16,927	68.4	1,126,130	531,225	158	10	35	17.2
Erie	1946	2,242	692,330	730,371	57,683	33,698	66.8	2,100,000	849,568	260	70	64	16.2
	1945	2,243	903,371	972,826	81,146	44,178	64.4	2,931,180	1,281,061	315	18	56	14.4
Grand Trunk Western	1946	1,026	252,553	257,604	1,700	8,064	66.3	498,283	195,092	66	..	10	13.2
	1945	1,026	282,689	289,668	2,341	9,523	66.6	616,791	273,700	64	1	14	17.7
Lehigh Valley	1946	1,242	303,587	331,992	45,642	13,212	67.7	877,127	416,832	109	28	32	18.9
	1945	1,247	454,183	494,927	58,322	20,120	61.9	1,449,801	697,978	152	..	17	10.1
New York Central	1946	10,328	2,726,588	2,895,206	159,514	98,941	62.7	6,266,852	2,526,226	926	142	351	24.7
	1945	10,331	3,613,437	3,911,139	251,465	138,941	63.8	9,622,219	4,491,846	1,125	10	276	19.6
New York, Chi. & St. L.	1946	1,656	563,239	574,198	6,948	23,125	69.3	1,403,950	587,263	144	21	23	12.2
	1945	1,656	745,422	758,797	12,389	30,903	68.7	1,997,665	922,279	168	11	17	8.7
Pere Marquette	1946	1,915	344,549	353,409	8,489	11,123	68.8	708,435	310,885	126	11	26	16.0
	1945	1,915	464,219	485,656	11,206	16,435	64.7	1,122,078	522,379	140	..	25	15.2
Pitts. & Lake Erie	1946	229	66,089	66,225	202	1,787	60.9	142,478	75,492	26	13	11	22.0
	1945	229	92,087	93,887	234	4,122	66.1	330,017	188,626	28	..	19	40.4
Wabash	1946	2,381	643,634	658,084	14,434	22,238	69.6	1,379,255	573,737	162	14	34	16.2
	1945	2,381	748,863	774,048	18,077	28,128	70.3	1,841,195	859,612	177	..	35	16.5
Central Eastern Region:													
Baltimore & Ohio	1946	6,103	1,563,694	1,877,678	184,974	53,876	67.2	3,437,112	1,523,011	688	163	319	27.3
	1945	6,095	2,457,645	3,000,708	295,491	86,183	64.0	6,259,654	3,120,920	954	..	225	19.1
Central of New Jersey†	1946	649	155,861	177,300	39,614	5,437	65.6	378,286	190,989	94	3	53	35.3
	1945	654	230,166	270,979	61,595	9,299	62.2	677,121	338,774	126	6	23	14.8
Chicago & Eastern Ill.	1946	910	168,112	168,858	3,643	4,345	69.5	270,527	121,186	52	8	19	24.1
	1945	912	250,881	253,820	5,829	7,308	64.5	503,120	237,269	68	..	8	10.5
Elgin, Joliet & Eastern	1946	392	99,861	103,415	3,010	2,793	66.0	205,831	106,233	47	4	20	28.2
	1945	392	132,285	136,575	3,990	3,910	68.2	293,880	159,546	64	..	12	15.8
Long Island	1946	372	34,419	36,632	16,070	413	55.7	29,111	12,590	36	..	5	12.2
	1945	372	39,069	40,955	18,063	488	59.3	33,333	15,112	46	..	6	11.5
Pennsylvania System	1946	10,033	3,232,147	3,652,162	472,399	124,787	66.9	7,720,192	3,308,791	1,596	342	304	13.6
	1945	10,024	4,629,470	5,375,053	707,349	183,719	63.8	13,010,030	6,318,046	2,041	..	185	8.3
Reading	1946	1,361	453,427	498,148	56,031	13,089	61.8	964,280	478,505	235	40	52	15.9
	1945	1,365	592,642	667,766	81,873	20,947	65.7	1,536,700	821,850	271	15	52	15.4
Pocahontas Region:													
Chesapeake & Ohio	1946	3,045	600,603	630,348	16,503	18,542	57.6	1,277,798	609,271	341	124	74	13.7
	1945	3,035	1,108,625	1,193,760	53,935	51,827	57.5	4,377,573	2,466,705	457	9	76	14.0
Norfolk & Western	1946	2,139	423,056	434,506	18,800	13,762	64.0	903,614	395,838	184	141	17	5.0
	1945	2,139	766,694	820,663	55,231	35,889	60.7	3,001,188	1,616,618	279	25	17	5.3
Southern Region:													
Atlantic Coast Line	1946	5,552	1,246,919	1,264,334	19,104	30,591	61.3	2,021,474	837,397	403	14	29	6.5
	1945	5,557	1,284,955	1,299,930	17,813	35,146	61.3	2,368,066	1,011,777	419	2	36	7.9
Central of Georgia†	1946	1,783	309,765	317,303	5,593	7,633	72.3	477,032	219,520	94	..	7	6.9
	1945	1,783	364,906	375,480	6,474	8,955	67.8	596,612	276,194	92	..	13	12.4
Gulf, Mobile & Ohio	1946	1,931	301,755	361,793	2,742	10,111	75.4	625,341	293,750	99	6	17	13.9
	1945	1,932	292,157	369,311	2,513	11,099	78.7	676,379	331,189	103	3	9	7.8
Illinois Central (incl.	1946	6,605	1,208,078	1,218,209	41,082	44,001	66.3	2,793,275	1,222,291	565	49	96	13.5
Yazoo & Miss. Vy.)	1945	6,605	1,752,466	1,782,837	33,136	69,004	63.6	4,784,227	2,240,310	661	3	55	7.6
Louisville & Nashville	1946	4,750	1,148,051	1,257,220	29,636	26,072	66.3	1,643,703	736,398	318	112	60	12.2
	1945	4,746	1,560,368	1,699,716	44,147	40,981	65.0	2,878,946	1,445,820	410	2	71	14.7
Seaboard Air Line*	1946	4,139	962,988	1,008,989	14,365	27,637	65.5	1,804,017	746,470	294	..	45	13.3
	1945	4,157	1,000,652	1,066,130	17,676	28,579	65.9	1,892,797	804,128	281	..	52	15.6
Southern	1946	6,450	1,840,984	1,872,741	30,079	44,718	68.6	2,666,210	1,118,203	609	6	120	16.3
	1945	6,471	2,109,924	2,141,775	38,598	50,501	71.2	3,138,137	1,451,375	607	..	100	14.1
Northwestern Region:													
Chi. & North Western	1946	8,062	945,936	971,941	21,589	30,038	67.8	1,927,433	856,083	337	30	147	28.6
	1945	8,069	1,050,172	1,095,839	22,210	34,111	69.8	2,299,505	1,074,496	351	7	113	24.0
Chicago Great Western	1946	1,445	254,043	257,609	11,157	7,806	70.1	501,863	219,844	69	..	12	14.8
	1945	1,445	279,979	289,737	7,671	9,289	73.1	592,415	271,389	74	..	9	10.8
Chi., Milw., St. P. & Pac.	1946	10,725	1,250,298	1,313,959	52,923	41,480	68.3	2,650,349	1,169,810	458	72	78	12.8
	1945	10,714	1,420,823	1,508,768	66,219	50,847	69.8	3,340,926	1,591,164	468	66	66	11.0
Chi., St. P., Minneap. & Om.	1946	1,606	193,931	206,743	11,027	4,984	68.0	329,502	143,160	79	5	33	28.2
	1945	1,606	196,550	211,737	13,656	5,269	70.0	357,897	168,110	86	19	21	16.7
Duluth, Missabe & I. R.	1946	546	52,026	52,245	377	1,924	47.9	180,430	104,689	50	..	2	3.8
	1945	546	128,705	129,394	2,111	6,762	51.6	625,126	383,784	52	..	4	7.1
Great Northern	1946	8,236	896,123	892,920	35,313	30,875	68.2	2,051,245	938,614	329	81	79	16.2
	1945	8,276	1,123,552	1,124,427	59,507	46,870	71.5	3,194,678	1,604,769	392	22	62	13.0
Min., St. P. & S. St. M.	1946	4,181	414,647	430,865	9,683	11,278	69.7	715,703	333,290	121	..	11	8.3
	1945	4,259	423,820	442,337	7,598	11,128	65.0	768,069	362,847	127	4	11	7.7
Northern Pacific	1946	6,576	770,605	811,447	50,294	27,870	68.5	1,878,474	889,147	351	40	52	11.7
	1945	6,570	876,794	935,396	66,841	38,680	77.4	2,481,624	1,270,197	349	35	56	12.7
Central Western Region:													
Alton†	1946	915	216,301	222,118	415	5,177	67.2	336,174	172,855	77	7	11	11.6
	1945	915	275,995	298,845	465	7,904	70.3	516,164	242,750	71	..	7	9.0
Atch., Top. & S. Fe (incl.	1946	13,085	2,596,823	2,751,875	135,735	94,162	68.0	5,967,950	2,331,829	732	79	177	17.9
G. C. & S. F. & P. & S. F.)	1945	13,115	3,594,453	3,805,881	188,021	128,994	64.4	8,626,472	3,526,511	894	4	104	10.4
Chi., Burl. & Quincy	1946	8,666	1,110,493	1,147,755	42,867	40,047	68.6	2,527,244	1,114,855	388	78	82	15.0
	1945	8,789	1,340,589	1,401,773	44,020	53,634	69.9	3,622,827	1,765,954	435	..	82	15.9
Chi., Rock I. & Pac.†	1946	7,615	1,145,982	1,184,297	16,409	36,074	65.0	2,308,298	953,716	331	28	92	20.4
	1945	7,716	1,443,232	1,504,062	15,691	46,695	70.2	2,986,325	1,364,034	387	..	73	15.9
Denver & R. G. Wn.†	1946	2,386	275,418	295,759	29,758	8,911	78.3	531,728	251,784	104	56	38	19.2
	1945	2,386	455,422	517,211	87,570	16,346	80.1	1,010,884	512,871	165	14	38	17.5
Southern Pacific—Pac. Lines	1946	8,172	2,179,753	2,432,406	415,286	81,445	65.3	5,421,742	2,139,889	739	1	179	19.5
	1945	8,179	2,294,920	2,617,160	401,606	98,392	69.2	6,396,571	2,717,813	751	..	171	18.5
Union Pacific	1946	9,775	2,016,201	2,100,688	152,175	74,509	67.7	4,678,447	2,062,997	562	209	145	15.8
	1945	9,781	3,031,293	3,227,143	279,358	114,770	72.0	7,362,781	3,286,682	787	34	79	8.8
Southwestern Region:													
Mo.-Kans.-Texas Lines	1946	3,241	540,505	551,426	9,231	14,474	66.5	920,568	391,667	115	..	50	30.3
	1945	3,241	736,091	761,974	12,929	20,620	65.5	1,383,579	642,084	150	..	15	9.1
Missouri Pacific†	1946	7,054	1,334,957	1,394,423	32,397	45,270	64.9	2,955,578	1,196,175	395	1	98	19.8
	1945	7,056	1,616,316	1,701,955	41,016	61,528	67.1	4,101,075	1,880,578	455	1	67	12.8
Texas & Pacific	1946	1,871	385,517	385,517	5,886	13,007	64.8	862,820	340,613	111	42	10	6.1
	1945	1,882	427,469	427,469	5,833	14,370	69.5	917,690	390,248	126	10	17	11.1
St. Louis-San Francisco†	1946	4,615	911,682	949,819	11,895	21,626	64.6	1,430,957	622,219	304	9	31	9.0
	1945	4,615	1,121,802	1,177,487	13,442	29,067	69.1	1,897,724	883,147	316	..	33	9.5
St. Louis-San Fran. & Texas	1946	156	33,915	35,780	32	621	64.9	41,233	16,776	10	..	1	9.1
	1945	161	40,492	41,619	7	825	73.1	50,637	22,001	7	..	2	22.2
St. Louis Southw. Lines†	1946	1,568	329,657	333,081	4,504	13,209	75.0	743,999	332,578	84	37	21	14.8
	1945	1,600	490,187	493,918	6,439	19,065	71.5	1,188,439	531,249	116	8	18	12.7
Texas & New Orleans	1946	4,321	926,909	929,004	11,895	25,810	69.6	1,616,960	670,428	226	2	35	13.3
	1945	4,325	1,230,647	1,238,781	48,312	32,891	66.6	2,164,846	948,642	260	..	21	7.5

* Report of receivers.
† Report of trustee or trustees.

Items for the Month of April 1946 Compared with April 1945

Region, road, and year		Freight cars on line: Home	Foreign	Total	Per Cent B. O.	G.t.m. per train-hr. excl.locos. and tenders	G.t.m. per train-mi. excl.locos. and tenders	Net ton-mi. per train-mile	Net ton-mi. per l'd. car-mile	Net ton-mi. per car-day	Car miles per car-day	Net daily ton-mi. per road-mi.	Coal lb. per 1000 g.t.m. inc. loco.	Mi. per loco. per day
New England Region:														
Boston & Albany	1946	365	5,501	5,866	0.7	22,366	1,392	535	23.5	452	30.1	7,237	196	78.3
	1945	265	6,133	6,398	0.2	24,780	1,675	690	27.7	560	33.2	11,316	174	96.5
Boston & Maine	1946	2,427	10,704	13,131	2.0	34,061	2,214	934	24.8	720	40.0	5,672	108	91.3
	1945	1,921	10,633	12,554	2.3	41,662	2,658	1,193	28.9	1,045	52.8	8,158	102	87.9
N. Y., New H. & Hartf.†	1946	2,757	18,437	21,194	2.1	30,314	2,196	927	23.6	537	31.3	6,421	95	79.7
	1945	2,178	20,816	22,994	4.0	32,526	2,399	1,065	26.9	666	35.5	9,474	93	90.0
Great Lakes Region:														
Delaware & Hudson	1946	4,725	4,197	8,922	3.8	47,715	2,780	1,328	32.2	1,185	56.8	12,999	117	52.0
	1945	2,715	7,798	10,513	3.4	51,932	3,401	1,771	37.2	1,596	65.0	21,972	109	75.3
Del., Lack. & Western	1946	6,434	10,015	16,449	6.1	42,385	2,717	1,191	27.8	727	37.8	12,740	115	85.7
	1945	5,428	14,571	19,999	3.9	43,776	2,958	1,395	31.4	848	39.5	18,236	124	95.9
Erie	1946	10,815	19,063	29,878	3.4	50,935	3,051	1,234	25.2	912	54.1	12,631	102	73.8
	1945	8,990	27,920	36,910	3.2	52,313	3,266	1,427	29.0	1,097	58.7	19,038	98	95.9
Grand Trunk Western	1946	4,180	7,832	12,012	8.0	40,478	1,977	774	24.2	546	34.0	6,338	87	123.6
	1945	1,845	9,312	11,157	4.1	43,868	2,200	976	28.7	795	41.5	8,892	87	130.3
Lehigh Valley	1946	7,379	11,318	18,697	8.0	50,569	2,965	1,409	31.5	701	32.8	11,187	106	79.0
	1945	5,853	22,757	28,610	2.1	51,972	3,282	1,580	34.7	769	35.8	18,658	101	115.1
New York Central	1946	58,696	84,134	142,830	4.5	38,284	2,330	939	25.5	560	35.0	8,153	119	81.1
	1945	41,203	107,128	148,331	3.4	41,900	2,696	1,259	32.3	953	46.3	14,493	105	109.5
New York, Chi. & St. L.	1946	3,457	10,460	13,917	3.6	48,865	2,499	1,046	25.4	1,385	78.7	11,821	89	109.8
	1945	1,765	15,824	17,589	1.9	48,789	2,692	1,243	29.8	1,743	85.0	18,564	90	136.8
Pere Marquette	1946	5,039	9,010	14,049	5.3	37,703	2,069	908	27.9	708	36.8	5,411	102	80.8
	1945	2,699	10,389	13,088	2.0	41,542	2,449	1,140	31.8	1,279	62.2	9,093	90	106.1
Pitts. & Lake Erie	1946	6,158	7,252	13,410	6.1	34,870	2,156	1,143	42.2	195	7.6	10,989	139	50.9
	1945	3,326	11,035	14,361	5.2	48,560	3,592	2,053	45.8	448	14.8	27,456	93	74.8
Wabash	1946	6,750	13,062	19,812	4.0	43,172	2,164	900	25.8	950	52.9	8,032	112	111.6
	1945	5,090	14,393	19,483	3.2	45,286	2,482	1,159	30.6	1,389	64.7	12,034	109	129.6
Central Eastern Region:														
Baltimore & Ohio	1946	50,794	43,638	94,432	4.1	32,120	1,233	990	28.3	551	29.0	8,318	149	61.3
	1945	35,448	58,219	93,667	4.2	31,219	2,608	1,300	36.2	1,088	47.0	17,068	145	96.5
Central of New Jersey†	1946	5,051	11,642	16,693	7.5	27,978	2,518	1,271	35.1	362	15.7	9,809	129	64.5
	1945	3,754	18,555	22,309	3.9	31,709	3,082	1,542	36.4	522	23.1	17,267	117	91.6
Chicago & Eastern Ill.	1946	3,454	3,239	6,693	4.4	30,496	1,635	732	27.9	619	31.9	4,439	134	75.4
	1945	1,696	4,838	6,534	3.7	36,896	2,059	971	32.5	1,244	59.4	8,672	118	114.1
Elgin, Joliet & Eastern	1946	7,602	5,138	12,740	1.4	18,076	2,216	1,143	38.0	266	10.6	9,033	155	69.4
	1945	7,459	6,506	13,965	3.0	18,417	2,355	1,278	40.8	367	13.2	13,567	144	89.4
Long Island	1946	43	5,346	5,389	.6	6,448	862	373	30.5	80	4.7	1,128	354	53.0
	1945	31	6,932	6,963	.4	6,677	882	400	31.0	70	3.8	1,354	284	55.4
Pennsylvania System	1946	148,659	98,364	247,023	7.5	37,294	2,444	1,048	26.5	451	25.4	10,993	140	66.9
	1945	117,570	131,727	249,297	4.0	37,585	2,904	1,410	34.4	837	38.1	21,010	120	98.3
Reading	1946	13,539	26,018	39,557	2.6	25,134	2,131	1,057	36.6	415	18.4	11,719	132	68.5
	1945	9,917	28,355	38,272	2.2	32,402	2,595	1,388	39.2	709	27.5	20,870	116	85.3
Pocahontas Region:														
Chesapeake & Ohio	1946	52,716	15,306	68,022	1.5	36,469	2,162	1,031	32.9	333	17.6	6,670	111	43.5
	1945	35,496	19,940	55,436	1.9	57,638	4,010	2,259	47.6	1,522	55.6	27,092	77	83.2
Norfolk & Western	1946	42,710	5,688	48,398	1.3	37,813	2,160	946	28.8	317	17.2	6,169	132	49.1
	1945	29,467	7,496	36,963	1.7	63,075	3,956	2,131	45.0	1,437	52.6	25,193	89	97.6
Southern Region:														
Atlantic Coast Line	1946	9,574	23,670	33,244	2.4	27,017	1,630	675	27.4	857	51.1	5,028	120	102.6
	1945	8,579	21,751	30,330	1.7	30,200	1,852	791	28.8	1,083	61.4	6,069	113	103.4
Central of Georgia†	1946	1,780	6,261	8,041	1.9	28,476	1,542	710	28.8	874	42.0	4,104	142	113.2
	1945	1,763	7,707	9,470	1.3	30,520	1,646	762	30.8	938	44.8	5,163	139	127.0
Gulf, Mobile & Ohio	1946	2,214	6,685	8,899	1.7	39,406	2,080	977	29.1	1,081	49.3	5,071	114	104.7
	1945	1,586	6,385	7,971	.7	40,988	2,321	1,137	29.8	1,378	58.7	5,714	112	110.9
Illinois Central (incl.	1946	18,257	35,143	53,400	1.2	40,135	2,367	1,036	27.8	773	42.0	6,169	129	62.4
Yazoo & Miss. Vy.)	1945	17,449	42,635	60,084	1.0	45,172	2,808	1,315	32.5	1,350	65.3	11,306	112	87.2
Louisville & Nashville	1946	40,060	16,433	56,493	2.5	24,606	1,432	642	28.2	498	26.6	5,168	152	91.8
	1945	27,482	18,852	46,334	4.7	29,818	1,845	927	35.3	1,067	46.5	10,155	130	125.6
Seaboard Air Line*	1946	6,052	20,406	26,908	2.1	33,194	1,911	791	27.0	912	51.5	6,012	122	111.7
	1945	5,717	18,744	24,461	1.9	33,326	1,942	825	28.1	1,058	57.0	6,448	122	117.8
Southern	1946	15,251	33,545	48,796	4.5	25,531	1,463	614	25.0	765	44.6	5,779	144	91.2
	1945	13,772	33,329	47,101	2.8	25,551	1,504	696	28.7	1,013	49.5	7,476	145	107.8
Northwestern Region:														
Chi. & North Western	1946	21,310	29,738	51,048	3.8	32,053	2,104	934	28.5	527	27.3	3,540	127	70.4
	1945	18,516	30,038	48,554	3.4	35,307	2,273	1,062	31.5	735	33.4	4,439	128	84.2
Chicago Great Western	1946	1,354	4,358	5,712	4.8	33,569	1,988	871	28.2	1,215	61.6	5,071	131	117.1
	1945	864	4,858	5,722	2.3	36,833	2,133	977	29.2	1,628	76.3	6,260	128	126.1
Chi., Milw., St. P. & Pac.	1946	24,672	29,159	53,831	1.7	34,378	2,136	943	28.2	654	34.0	3,636	123	81.0
	1945	18,743	30,568	49,311	2.5	38,424	2,370	1,129	31.3	1,096	50.2	4,950	121	93.3
Chi., St. P., Minneap. & Om.	1946	1,242	7,079	8,321	7.9	22,339	1,730	752	28.7	539	27.6	2,971	131	67.3
	1945	725	5,849	6,574	7.0	26,525	1,854	871	31.9	815	36.5	3,489	110	60.9
Duluth, Missabe & I. R.	1946	15,073	307	15,380	3.0	60,628	3,613	2,096	54.4	226	8.7	6,391	76	36.4
	1945	15,123	230	15,353	3.5	86,094	5,062	3,108	56.8	833	28.4	23,430	64	82.2
Great Northern	1946	23,000	22,190	45,190	3.3	36,421	2,305	1,055	30.4	666	32.1	3,799	110	67.8
	1945	18,377	18,861	37,238	2.5	45,882	2,857	1,435	34.2	1,508	61.6	6,464	97	87.3
Min., St. P. & S. St. M.	1946	6,369	6,223	12,592	3.7	30,285	1,748	814	29.6	810	39.3	2,657	101	114.4
	1945	5,401	6,151	11,552	5.5	32,895	1,835	867	32.6	1,058	49.9	2,840	98	107.4
Northern Pacific	1946	18,955	17,403	36,358	3.8	39,795	2,460	1,164	31.9	786	36.0	4,507	130	70.7
	1945	14,509	17,381	31,890	3.5	45,550	2,851	1,459	32.8	1,371	53.9	6,444	130	80.7
Central Western Region:														
Alton†	1946	1,619	5,885	7,504	.9	38,977	1,566	805	33.4	741	33.0	6,297	115	84.9
	1945	1,283	7,087	8,370	3.5	40,172	1,888	888	30.7	924	42.8	8,843	118	137.0
Atch., Top. & S. Fe (incl.	1946	40,540	37,077	77,617	5.0	45,834	2,309	902	24.8	1,030	61.1	5,940	108	102.2
G. C. & S. F. & P. & S. F.)	1945	36,838	54,645	91,483	3.0	44,548	2,419	989	27.3	1,367	77.6	8,963	111	137.7
Chi., Burl. & Quincy	1946	17,656	23,302	40,958	3.4	40,314	2,283	1,007	27.8	846	44.3	4,288	112	75.9
	1945	15,614	26,343	41,957	2.2	43,993	2,715	1,324	32.9	1,440	62.6	6,698	105	95.8
Chi., Rock I. & Pac.†	1946	11,265	22,313	33,578	5.0	37,576	2,025	837	26.4	904	52.6	4,175	107	92.5
	1945	8,009	26,279	34,288	3.3	35,912	2,087	953	29.2	1,360	66.4	5,893	112	114.5
Denver & R. G. Wn.†	1946	8,549	3,621	12,170	5.1	37,872	1,939	918	28.3	713	32.2	3,518	163	57.2
	1945	7,667	6,591	14,258	5.5	36,343	2,248	1,141	31.4	1,217	48.4	7,165	171	94.6
Southern Pacific—Pac. Lines	1946	22,194	47,212	69,406	3.0	40,122	2,516	993	26.3	1,064	62.1	8,729	104	110.1
	1945	22,397	56,176	78,573	2.7	40,900	2,810	1,194	27.6	1,156	60.5	11,076	100	113.9
Union Pacific	1946	27,613	29,936	57,549	4.6	48,997	2,354	1,038	27.7	1,170	62.4	7,035	128	83.8
	1945	24,327	39,769	64,096	3.8	49,394	2,465	1,100	28.6	1,711	83.0	11,201	127	132.7
Southwestern Region:														
Mo.-Kans.-Texas Lines	1946	1,679	8,561	10,240	1.0	34,574	1,710	727	27.1	1,275	70.8	4,028	83	120.1
	1945	1,105	10,841	11,946	.2	32,927	1,891	878	31.1	2,069	101.5	6,604	85	160.9
Missouri Pacific†	1946	15,612	23,983	39,595	1.8	40,481	2,222	899	26.4	1,023	59.6	5,652	107	100.6
	1945	11,071	31,487	42,558	1.4	40,991	2,556	1,172	30.6	1,555	75.8	8,884	105	117.8
Texas & Pacific	1946	1,458	7,682	9,140	1.9	44,579	2,251	888	26.2	1,328	78.2	6,068	87	85.8
	1945	1,248	8,555	9,803	1.1	39,042	2,155	916	27.2	1,421	75.3	6,912	95	98.9
St. Louis-San Francisco†	1946	6,854	11,974	18,828	2.1	32,359	1,577	686	28.8	1,087	58.5	4,494	129	97.6
	1945	5,483	16,113	21,596	1.6	32,107	1,701	792	30.4	1,519	72.4	6,379	130	117.8
St. Louis-San Fran. & Texas	1946	....	407	407	1.7	23,711	1,226	499	27.0	1,667	95.1	3,585	118	120.6
	1945	....	464	464	1.9	22,141	1,259	547	26.7	1,612	82.6	4,555	114	156.6
St. Louis Southw. Lines†	1946	1,229	5,437	6,666	1.9	43,716	2,261	1,011	25.2	1,629	86.2	7,070	80	84.6
	1945	780	8,999	9,779	.9	35,501	2,427	1,085	27.9	1,930	96.8	11,068	77	127.2
Texas & New Orleans	1946	3,902	18,181	22,083	3.7	32,903	1,767	733	26.0	1,042	57.6	5,172	89	124.3
	1945	3,287	20,065	23,352	2.1	31,865	1,778	779	28.8	1,416	73.8	7,311	93	158.6

Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.



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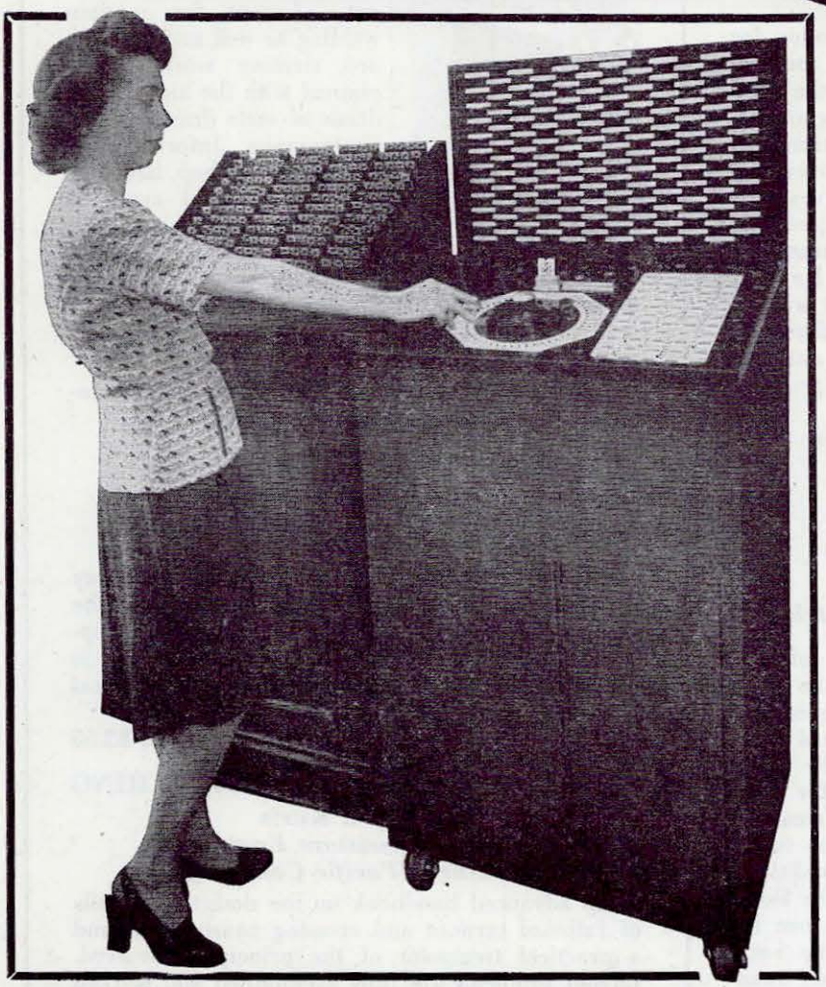

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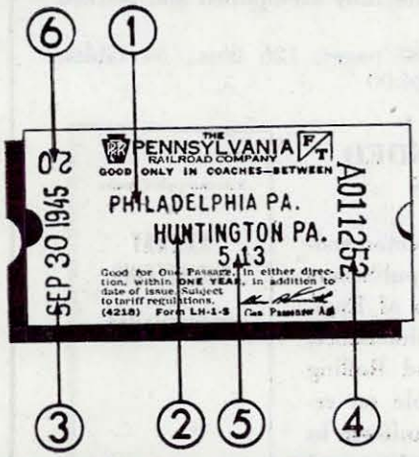

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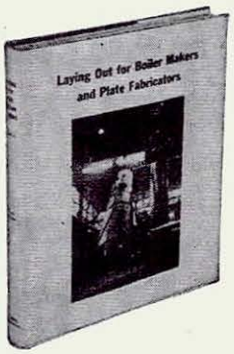
Boiler Designer, New York Central



Layout problems in sheet metal and boiler plate, featuring locomotive boiler layout. Layout for modern welding as well as for standard riveting work is explained with the aid of hundreds of scale drawings and photographs. Information is presented in shop language and the material arranged from simple to complex. Problems are worked out without recourse to higher mathematics. A new chapter on "Laying Out and Computing Boiler Patches" is of particular usefulness to round house foremen.

1944. 5th. 522 pages, 715 drawings, 47 photographs, index, 8¾ x 11¼, cloth, $8.00

MASTERING MOMENTUM

By Lewis K. Sillcox
First Vice-President, New York Air Brake Company

An analysis of modern trends in steam railway service and changes in railway practice with the development of new types of high-speed equipment. The theory and practice of train braking is discussed and worked out examples illustrate typical procedure in train retardation calculations.

1941. 275 pages, 130 illus., 6 x 9, cloth, $2.50

TRACK AND TURNOUT ENGINEERING

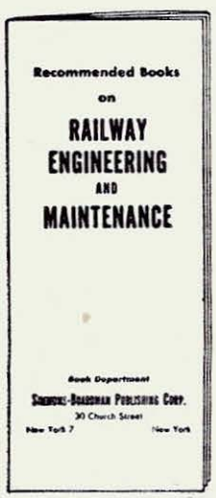
By C. M. Kurtz
Formerly Assistant Engineer Southern Pacific Company

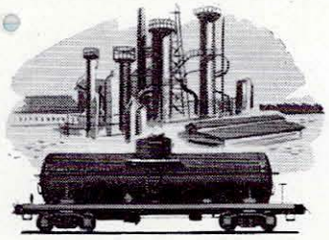
An advanced handbook on the design of details of railroad turnout and crossing construction and a practical treatment of the principles involved. Layout problems are fully exemplified and worked out in detail.

1945. 3rd. 460 pages, 126 illus., 34 tables, 4½ x 7½, cloth, $4.00

RECOMMENDED BOOKS

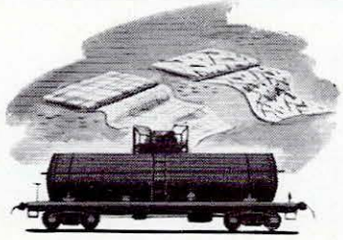
Three lists of recommended books of all publishers covering the fields of Engineering and Maintenance, Motive Power, and Rolling Stock, are available on request. They are uniform in size, 3½ x 18-inches, and contain brief but comprehensive description of some 125 books each.





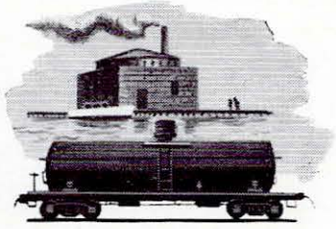
ALCOHOL

Clean, steel car, 6,000 to 10,000 gallon capacity.



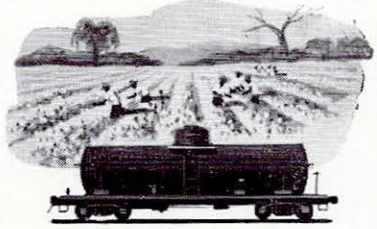
CAUSTIC SODA

Heavily insulated steel car, with or without heater coils, 8,000 or 10,000 gallon capacity. Usually specially lined.



CHLORINE

Insulated, welded car; built to withstand pressure up to 500 pounds; 15 or 30 ton capacity.

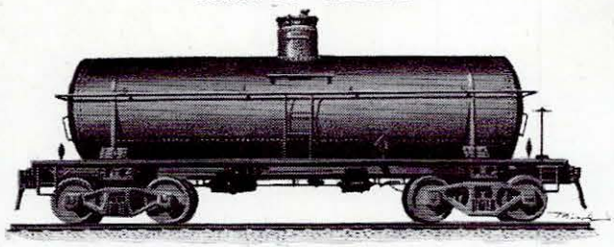


COTTONSEED OIL

Clean, steel coiled car of 8,000 gallon capacity.

FOR RENT

TANK CARS



Tank car transportation of liquids in bulk, pioneered by General American has proved its versatility, its efficiency, its economy.

The General American fleet comprises more than 37,000 specialized tank cars . . . 207 different types of tank cars . . . designed for the safe and swift hauling of an almost infinite variety of liquids.

General American's strategically located offices, plants, and repair shops keep these tank cars at your service; provide you with precisely the type of tank cars you want, *when* you want them, *where* you want them.

If your problem is the transportation of liquids in bulk, let the nearest General American office help you.

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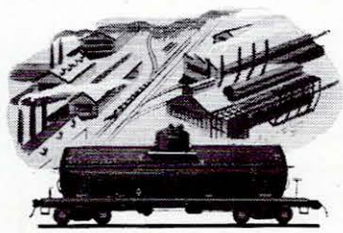
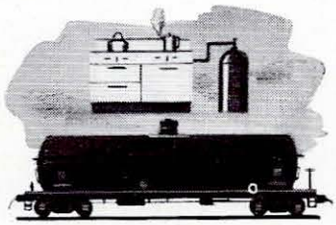
GENERAL AMERICAN TRANSPORTATION CORPORATION
CHICAGO



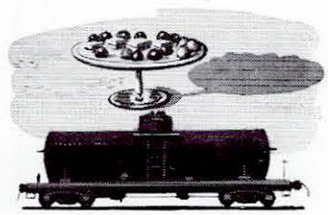
FUEL OIL

Steel car, steam coiled, 8,000 to 12,500 gallon capacity.



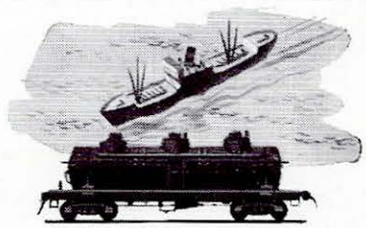
PROPANE

Heavily constructed car, welded and insulated. Built to withstand internal pressures to 300 pounds. Capacity 10,000 to 11,000 gallons.



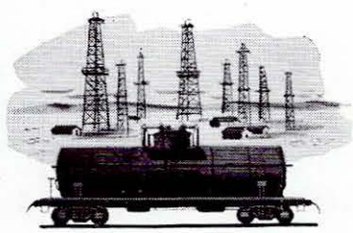
GLUCOSE

Clean, steam coiled with heavy truck capacity. Usually lined with aluminum paint.



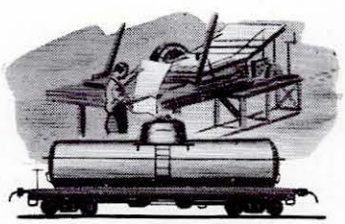
LUBRICATING OIL

Steel car, with steam coils, single or multiple compartment; usually 8,000 gallon capacity.



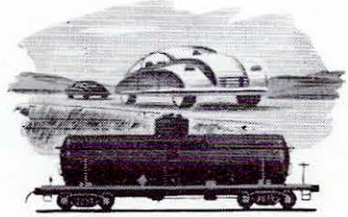
MURIATIC ACID

Car lined with pure or synthetic rubber; 8,000 to 10,000 gallon capacity.



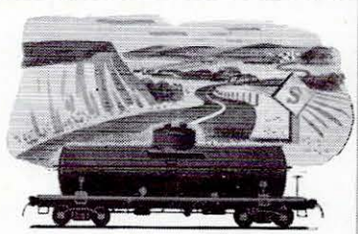
ACETIC ACID

Aluminum Car, 8,000 or 10,000 gallon capacity.



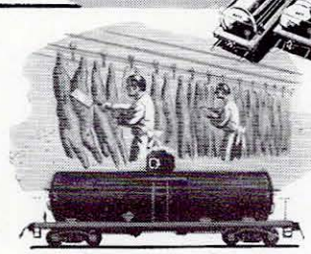
GASOLINE

Clean car, 6,000 to 12,500 gallons; single or multiple compartment.



ASPHALT OR TAR

Heavily steam coiled car; with 2 or more inches of insulation; steam jacketed outlet; 8,000 to 10,000 gallon capacity.

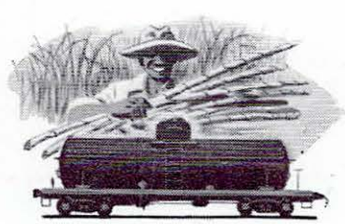


LARD

Clean steam coiled car, usually of 8,000 gallon capacity.

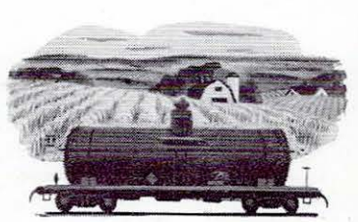
WINE

Insulated car with one to six compartments. Interior coated to preserve quality.



MOLASSES

Steam coiled car with heavy capacity trucks; 8,000 gallon capacity.

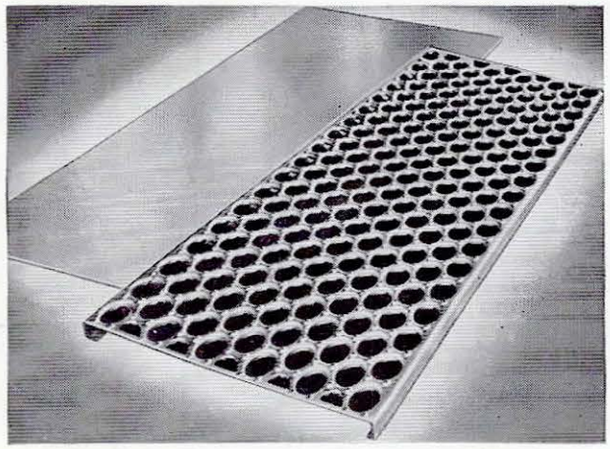


SULPHURIC ACID

Heavily constructed steel car with heavy truck capacity. Equipped to unload through dome.

REPLACE UNSAFE WOODEN RUNWAYS WITH MORTON "OPEN-GRIP" METAL RUNNING BOARDS

Safety-minded railroads are avoiding accident risks on running boards, where a slip or misstep by any trainman may cause a bad fall, by installing Morton "Open-Grip" metal running boards. They're thrifty in service and in *slip-insurance* . . . easy and quick to install . . . last the lifetime of the car . . . nothing to split or warp or splinter . . . no parts to work loose . . . do not collect snow or rainfall. Next time your freight cars go to the shop for repair or overhaul, begin at the top and replace unsafe running boards with grips that give the safest footing. Specify Morton "Open-Grip" runways —the modern type—when you order new freight cars. Write for full information.



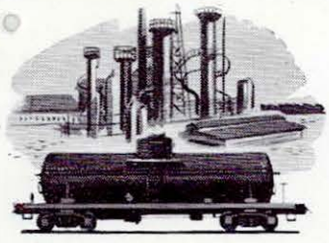
IMPORTANT! One-piece Construction

No lock-joints, bolts, rivets or welds in Morton "Open-Grip" runways. They are formed from solid sheets of heavy gauge metal; installed with simple cup and bolt device, designed to avoid precision work, fitting or matching of application holes.

MORTON MANUFACTURING COMPANY

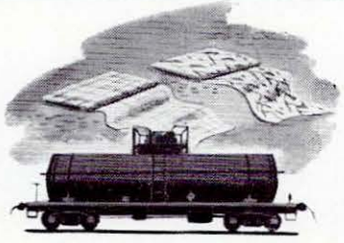
5105 WEST LAKE STREET • CHICAGO 44, ILLINOIS

DISTRICT SALES OFFICES: NEW YORK • ST. LOUIS • ST. PAUL • WASHINGTON • SAN FRANCISCO • LOUISVILLE • MONTREAL



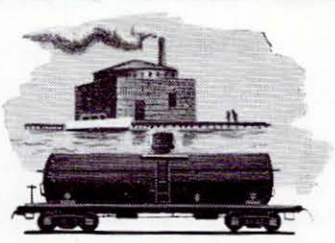
ALCOHOL

Clean, steel car, 6,000 to 10,000 gallon capacity.



CAUSTIC SODA

Heavily insulated steel car, with or without heater coils, 8,000 or 10,000 gallon capacity. Usually specially lined.



CHLORINE

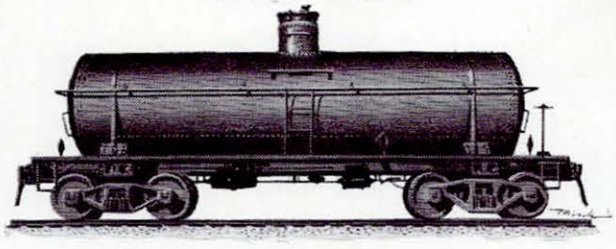
Insulated, welded car; built to withstand pressure up to 500 pounds; 15 or 30 ton capacity.

COTTONSEED OIL

Clean, steam coiled car of 8,000 gallon capacity.

FOR RENT

TANK CARS



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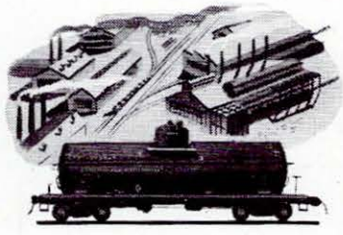
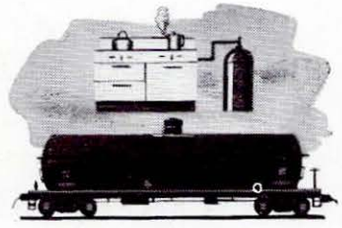


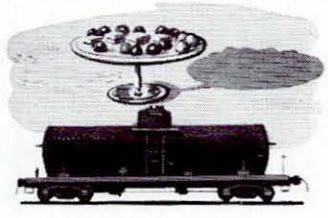
FUEL OIL

Steel car, steam coiled, 8,000 to 12,500 gallon capacity.



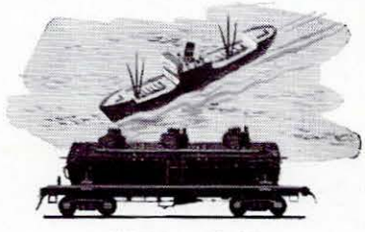
PROPANE

Heavily constructed car, welded and insulated. Built to withstand internal pressures to 300 pounds. Capacity 10,000 to 11,000 gallons.



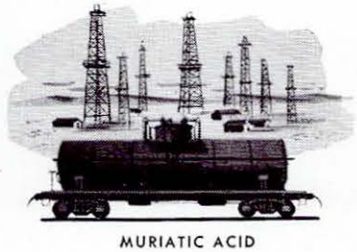
GLUCOSE

Clean, steam coiled with heavy truck capacity. Usually lined with aluminum paint.



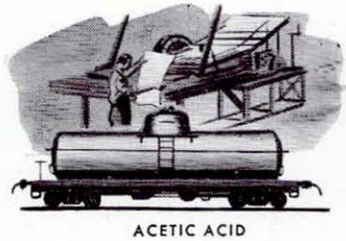
LUBRICATING OIL

Steel car, with steam coils, single or multiple compartment; usually 8,000 gallon capacity.



MURIATIC ACID

Car lined with pure or synthetic rubber; 8,000 to 10,000 gallon capacity.

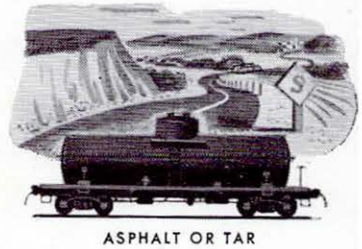


ACETIC ACID

Aluminum Car, 8,000 or 10,000 gallon capacity

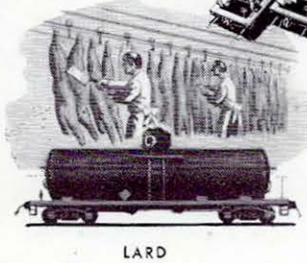
GASOLINE

Clean car, 6,000 to 12,500 gallons; single or multiple compartment.



ASPHALT OR TAR

Heavily steam coiled car; with 2 or more inches o insulation; steam jacketed outlet; 8,000 to 10,00 gallon capacity.

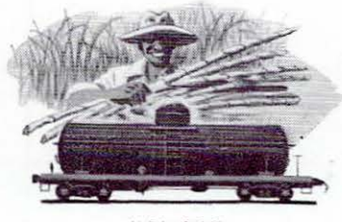


LARD

Clean steam coiled car, usually of 8,000 gallon capacity.

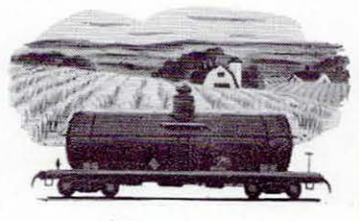
WINE

Insulated car with one to six compartments. Interior coated to preserve quality.



MOLASSES

Steam coiled car with heavy capacity trucks; 8,000 gallon capacity.



SULPHURIC ACID

Heavily constructed steel car with heavy truck capacity. Equipped to unload through dome.

THE RACE HORSE

Here's a new Baldwin unit that opens a whole new field of opportunity for railroads that want to expand and expedite their service to shippers.

Designed to ride smoothly at speeds up to 117 m.p.h., it generates 3000 hp. from two super-charged engines mounted in one cab, eliminating the space-consuming multiple units that in the past have been necessary on jobs requiring more than 2000 hp.

The use of a superior running gear, developed and successfully used in modern electric locomotive design, improves the "roadability" of the locomotive, and permits the use of unusual traction motor capacity reserve. At the same time, the driving axle load is held to a conservative limit.

The first of these locomotives to be built is already serving on heavy, fast freight runs, rushing perishable fruits and vegetables to Northern markets. Units have been ordered by a number of other roads.

BALDWIN FIRSTS

THE WORK HORSE

Here's another new Baldwin unit that makes a big contribution in accelerating and improving the handling of freight.

Designed specifically for heavy transfer and road service, it has a starting tractive effort of 105,000 lb. at 30% adhesion, and a continuous tractive effort of 62,250 lb. at a speed of 9.5 m.p.h. The maximum restricted speed is 60 m.p.h.

Trucks are of a special 6-wheel design, with cast-steel frames. A total of six traction motors, one to each axle, transmits a smooth, even flow of power. Two normally aspirated Baldwin 8-cylinder diesel engines, driving Westinghouse generators, develop a total of 2000 hp.

With so much obsolete equipment due for replacement, there is a real opportunity today for a comprehensive modernization program, with motive power that is designed specifically for tomorrow's needs. One of our representatives will be pleased to give you full details on either or both of these important new Baldwin developments.

THE **BALDWIN-**
LOCOMOTIVE WORKS, PHILADELPHIA

Westinghouse
ELECTRIC CORPORATION, EAST PITTSBURGH, PA.

REPLACE UNSAFE WOODEN RUNWAYS WITH MORTON "OPEN-GRIP" METAL RUNNING BOARDS

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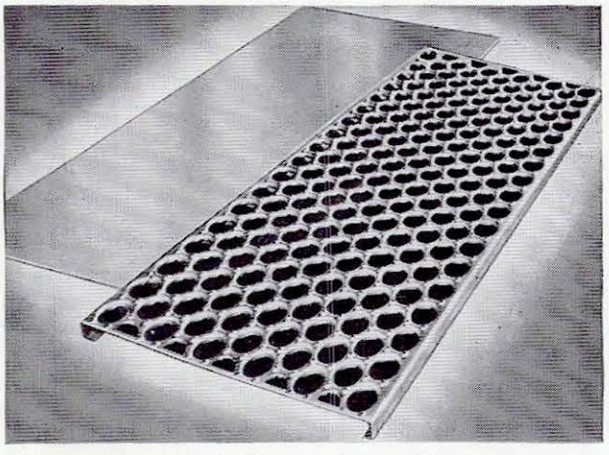

IMPORTANT! One-piece Construction

No lock-joints, bolts, rivets or welds in Morton "Open-Grip" runways. They are formed from solid sheets of heavy gauge metal; installed with simple cup and bolt device, designed to avoid precision work, fitting or matching of application holes.

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5105 WEST LAKE STREET • CHICAGO 44, ILLINOIS

DISTRICT SALES OFFICES: NEW YORK • ST. LOUIS • ST. PAUL • WASHINGTON • SAN FRANCISCO • LOUISVILLE • MONTREAL

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. . . for bulk transfers at docks and terminals, coaling, ballast cleaning, ditching, hard digging, and ash handling.

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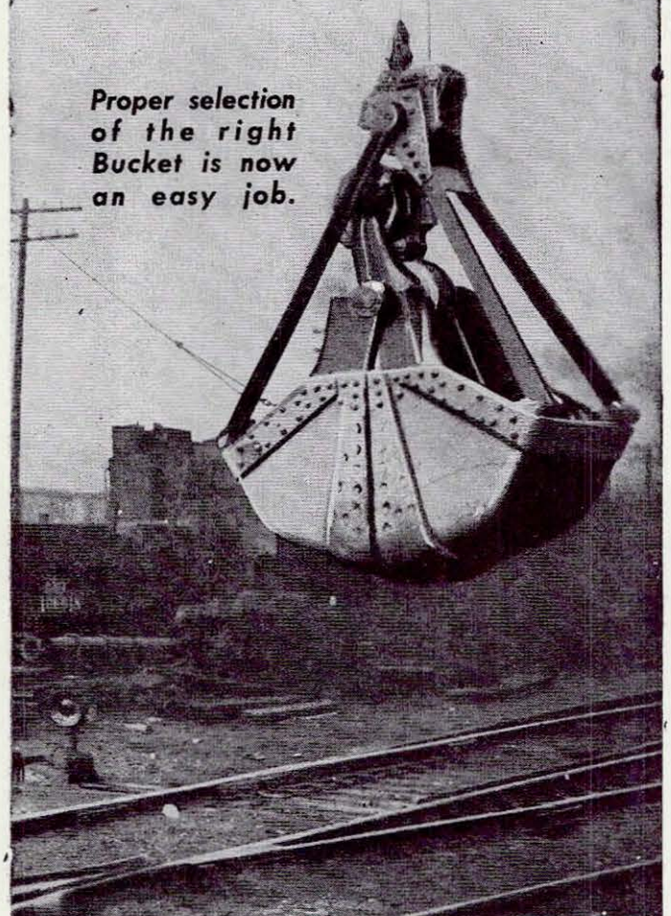
Proper selection of the right Bucket is now an easy job.



BLAW-KNOX DIVISION
of Blaw-Knox Company
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New York • Chicago • Philadelphia • Birmingham • Washington

Journal Packing Stays Clean

in The Republic STEVENS
RINGLOX Vacuum-Tight DOPE DRUM

● That's the way journal packing should be—free from dirt, dust, water and other foreign matter—and that's the way it always stays in the Republic STEVENS Dope Drum.

The patented Ringlox closure is vacuum-tight—easy to open—easy to close. A take-up bolt compensates for wear and shrinkage—insures a tight closure throughout the years of service in the storage and shipment of journal packing. Write for details.

★ ★ ★

Just push the handle to open—or pull it to close. No tools required with the STEVENS Ringlox Vacuum-Tight Drum.

NILES STEEL PRODUCTS DIVISION
REPUBLIC STEEL CORPORATION
NILES, OHIO

Republic STEVENS
METAL BARRELS AND DRUMS

GET TOGETHER DEPARTMENT

Educational Services

for

RAILROAD MEN

Our New Service

on

Diesel Locomotive

Operation

is highly recommended

for

Engineers and Firemen

The Railway

Educational Bureau

Omaha 2, Nebraska

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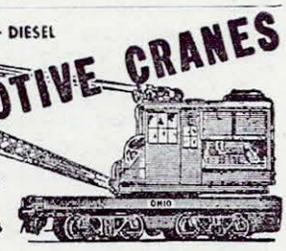

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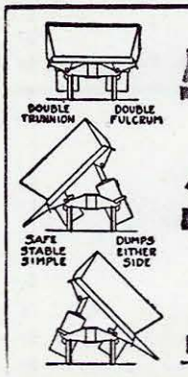

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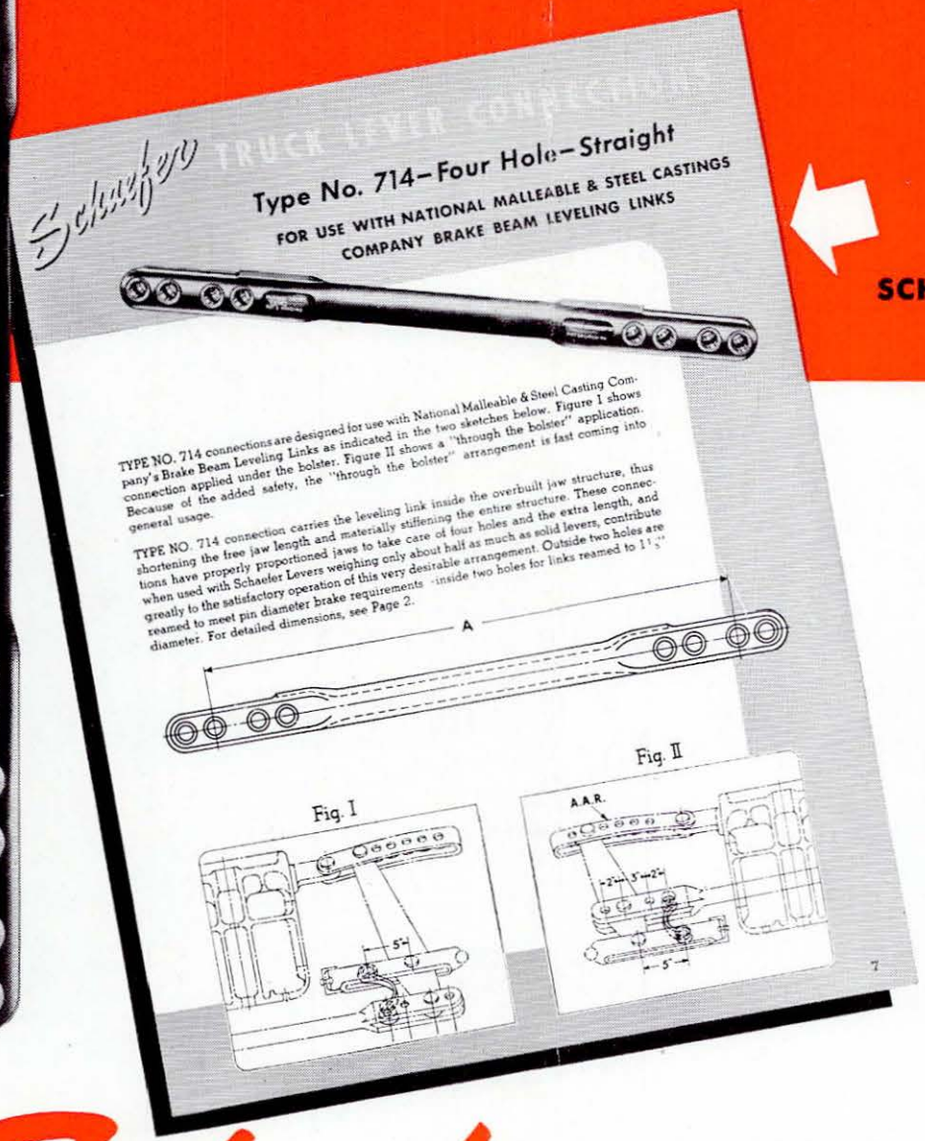
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A
Fig. I
Fig. II
A.A.R.
7

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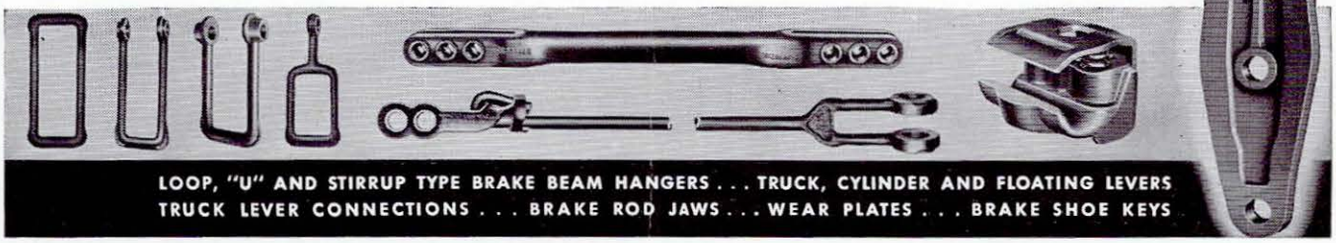

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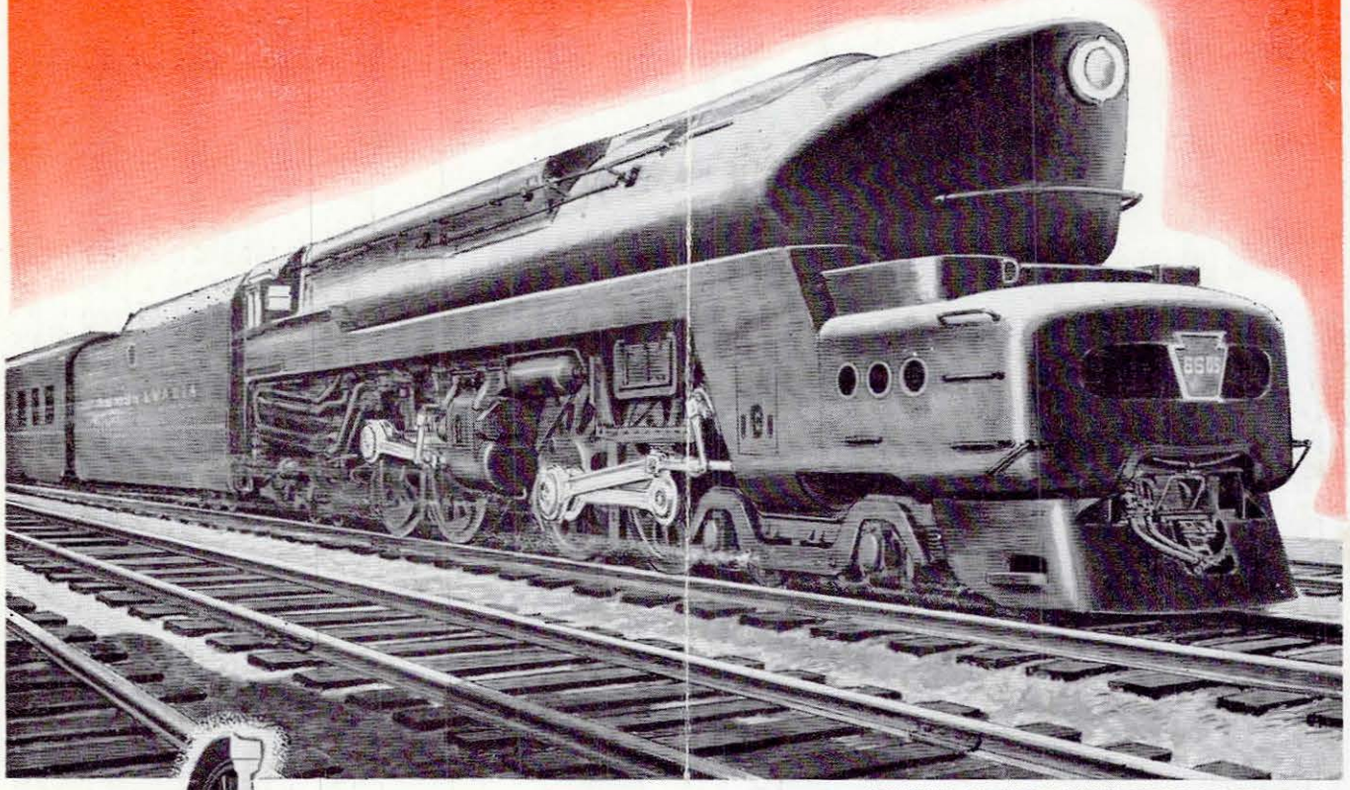

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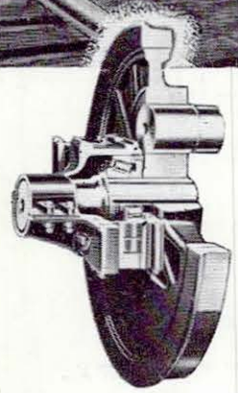

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